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SELECTED PAPERS.

Case of Hydrophobia, wherein the operation of Tracheotomy was performed; and an account of the appearances on dissection.

By HENRY OLDKNOW, Surgeon, Nottingham.

From the Edinburgh Medical and Surgical Journal, for 1809.

ON the 25th of October last, William Hill, aged forty-five years, by trade a tailor, had a portion of the scrotum torn away by the bite of a dog; at the same time he received a contusion on the thigh, close to the scrotum; and, in attempting to separate the jaws of the animal with his hands, the point of a tooth penetrated the back part of one finger of the left hand, making a small wound, similar to the puncture of a small nail. There being a general alarm about mad dogs at this time, and some unpleasant symptoms existing in this dog,* it was thought pru-

* It was thought at this time the dog was not mad; he ate and drank heartily, but very soon rejected the food from his stomach; he appeared lively, and showed no signs of indisposition, except sickness after meals, but was observed to be out of temper, the day before having bit the boy who brought him his food, and who generally had the care of him. This, however, was not much noticed, as he frequently had been observed to tease the animal at these times, by pointing at him, &c. nor would the boy submit to have any thing done to him, being confident the dog ailed nothing; however, it was thought proper to keep him confined. The day following, wishing to

dent to take the necessary precautions; consequently the edge of the lacerated scrotum (the wound being about the size of a shilling, and exposing the tunica vaginalis testis) was pared away and cauterized; the contusion on the thigh and the punctured wound of the finger were cauterized only; afterwards rags wet with the aqua ammonia pura were applied over the cauterized parts, until considerable inflammation was excited; so that, in a few days, a large slough was cast off from the thigh, and a small one from the punctured finger, each according to the extent of surface on which the caustic was applied. The wound on the finger suppurated very little, and soon healed; that on the scrotum, and the contusion on the thigh, suppurated copiously, and healed in about a month.

On the 10th of December, forty-six days subsequent to the bite, I was desired to visit this man, who I found complaining of sickness, and a great oppression at the stomach; flatulence, frequently sighing, moaning, and breathing short; having great distress of countenance, and a sensation of constriction about the upper part of the throat; great difficulty in swallowing liquids, the sight of which agitated him much, and produced, to all appearance, a spasmodic action of the diaphragm and muscles of the glottis, similar to what is observed in hysteric paroxysms, and which was greatly increased in the attempt to swallow; he had equal difficulty in swallowing solids. On examining the wounds, they were found to be healed; that on the thigh was in part covered with a scab, which easily separated, without tearing the new skin formed underneath; nor did the cicatrices appear unhealthy or inflamed. He had, however, complained, as much as four days before, of a soreness, or, to use his own expression, of a sensation of roughness

remove the dog, a very foolish and unsuccessful attempt was made to get him into a bag, to convey him with more safety, and in the attempt the collar slipt over his head. Fearful now of some mischief, it was agreed he should be shot. The ball missing him, the report of the pistol alarmed him so much, that he sprung to the door of the yard he was confined in, and, making his escape, seized this poor man, who stood directly in his way, and did not relinquish his hold until stunned by a blow on the head, and was afterwards killed. The body was opened, but no diseased appearances presented themselves; his stomach was completely filled, even to distention, with a quantity of hay he had eaten in the kennel.

in the skin, about the middle of the humerus, with a prickling numbness, and sometimes tremor, of the left hand and arm.

It appeared, on inquiry, that the first symptoms of constitutional derangement were noticed the day preceding, during dinner, at sight of which he felt great disgust; and it was with difficulty he could be prevailed on to eat, complaining of nausea, headache, and oppression at the precordia; and, in the evening, wishing to take some warm ale he saw preparing for another person, it had no sooner touched his lips than he became greatly agitated, and could not swallow more than two or three draughts. His rest was disturbed during the night, and he complained of a sensation of suffocation when lying down, so as to oblige him to keep an erect position. Notwithstanding these symptoms had existed several hours, I was not sent for until the following morning about nine o'clock. An emetic was directed, which he took with reluctance, from the horror he felt at the sight of fluids. However, he did hastily swallow it, after many attempts, and was convulsed for about half a minute; its operation was distressing, from not being willing to drink with it. A quantity of yellow fluid was evacuated, but without relief to the stomach. Two blisters were applied to the external fauces, and two ounces of strong mercurial ointment directed to be rubbed into the inside of the legs and arms. A consultation was appointed at twelve o'clock, at which many professional gentlemen were present, and it was further directed, that a blister should be applied to the scrobiculus cordis, another to the wound on the thigh, and one to the inner side of the arm affected; ten grains of musk, ten of carbonate of ammonia, and one of opium, to be given in the form of a bolus, every three hours, and six ounces of strong mercurial ointment to be well rubbed over the whole surface of the body. It was likewise directed, that Webb's medicine, recommended by Mr. Blane, in the Medical and Chirurgical Review, should be administered, which was prepared in the form of a decoction, with milk, because the poor man now found less difficulty in swallowing fluids than solids, although the former, when taken, produced so marked an agitation of the whole frame; indeed, so incapable was he of taking any

thing of substance, that the boluses were obliged to be dissolved whenever he took them.*

At six o'clock in the evening we met again, and found our patient much worse; every symptom of the disease had increased to an alarming degree. He appeared frightened when any person approached him; spat up a considerable quantity of frothy mucus; and the constriction of the throat before spoken of, (the situation of which he described by pointing to the pomum adami,) became so distressing, that he requested the window of the room might be opened to admit more air. From this circumstance, it was proposed that the operation for tracheotomy, as suggested by Dr. Rush, should be resorted to, whenever the sensation of suffocation should become so urgent as to justify such an attempt for the preservation, or rather the prolongation of life. Antispasmodic clysters, with laudanum, were directed to be administered every three hours. At twelve o'clock at night, an opening was made into the trachea, between the thyroid gland and the sternum, but without affording any relief. The difficulty of breathing gradually increased, until about half an hour before his death, when he became suddenly relieved; he now drank, and asked for a bason of water to wash his hands in, both of which he did without expressing any uneasiness, but immediately after which, sunk into a lethargic state, and died about four o'clock in the morning. It was observed by those present at his death, that, from the quantity of mucus collected about the glottis, respiration would have ceased sooner had it not been for the opening made into the trachea.

Not in any stage of the disease did this poor man make violent convulsive efforts of the body, nor was he ever unconscious of what passed about him. His pulse was, throughout, small, feeble, and a little irregular, averaging from 80 to 100 beats in a minute.

* It is a remarkable fact, and worthy of observation, that the swallowing of fluids was accomplished with comparative facility, when strong pressure was made upon the lesser lobes of the ears. This expedient was suggested by a gentleman present, who recollected to have read of its good effects in lessening the difficulty of swallowing in cynanche tonsilaris.

Dissection, thirty-two hours after death.

The body entirely free from putrefaction; inflammation of the mucous membrane of the trachea, extending from the glottis to the subdivisions of the bronchiæ, and considerable mucous secretion, similar to that spat up during life; the right lung distended with air, the left collapsed; no unusual quantity of fluid in the pericardium; the heart fatty; the left ventricle distended with black blood, the right almost empty; the diaphragm free from diseased appearance; no inflammation of the pharynx or œsophagus; the stomach greatly distended with air, but void of solid contents; considerable erythematous inflammation about the cardia; the intestines somewhat distended with flatus, but healthy; the liver healthy; the gallbladder distended with bile; the spleen, kidneys, pancreas, and urinary bladder, of a natural appearance; unusual vascularity of the pia mater and brain, the lateral ventricle containing about six drachms of fluid.

The morbid appearances of the brain are probably the consequence of a fall he had about a year previous, down a flight of stairs, from which he received a violent contusion of the head, and at the same time fractured the lower jaw.

This accident confined him to his house for many weeks; indeed, he never perfectly recovered it, being ever after subject to violent headache and derangement of intellect, whenever he committed any irregularity in living.

Another case of the hydrophobia has lately occurred in a village near Nottingham, any particulars of which I am not in possession of, except that the disease occurred about a period of six weeks after the bite, and was extremely rapid in its progress. I mention it, because the dog that bit this individual belonged to a man in this town, and was not suspected to be mad until ten days after he had bitten this unfortunate sufferer. He ate and drank heartily, showed no signs of indisposition, hunted as usual, and occasionally went into a neighbour's house, among children, without injuring any one of them; but on the morning of the tenth day, he was observed in the street, snapping at every dog that passed, and was immediately taken in and destroyed.

This is a very curious and important circumstance, inasmuch

as it tends to show, that canine madness, in its incipient stages, is very difficult of detection; and that a dog, at this period of the disorder, is capable of communicating the infection, which, I believe, is not generally understood.

Nottingham, Feb. 11, 1809.

Remarkable Recovery from a very extensive Wound in the Abdomen.

By B. HAGUE, Surgeon, Ripon.

From the Edinburgh Medical and Surgical Journal, for 1809.

AUGUST 30th, 1808, ten o'clock, A. M. I went to Norton Mills, about four miles from hence, to see John Brown, aged twelve years, who had received a wound in the abdomen, by a pair of wool shears. On my arrival, which was little more than an hour after the accident had happened, I found the poor lad in a very distressing situation; the *great arch of the stomach*, and the whole of the *intestinal canal* (duodenum excepted) contained within the abdomen, having protruded through the wound. The incision was on the left side of the body, commencing at about two inches below the scrobiculus cordis, and extending in a straight line near four inches in length, distant from the navel two inches, so that I suppose it must have been pretty nearly in the course of the linea alba of that side. He was quite sensible, and had vomited so as to empty the stomach; very little blood was lost. I immediately proceeded very carefully to examine the protruded viscera, none of which were wounded, and reduced them as quickly as possible, beginning with the stomach, and following the regular course of the intestines, in the latter portion of which I distinctly felt feces, of rather firm consistence. He complained of some pain during the reduction, though not much, and expressed great relief when the parts were completely returned. I now desired an assistant to lay the palm of his hand over the wound, and make some pressure upon it, for I found, that without this, the parts would soon have protruded again by the action of respiration, which was oppressed and laborious. I brought the sides of the wound together by five sutures, beginning from above downwards, and passed the needle on

each side quite through the integuments with the peritoneum, observing great caution not to wound the obtruding intestines, by keeping my finger betwixt them and the point of the needle, in passing it through. I next applied straps of adhesive plaster, so as to produce compression, and over them a compress of linen, securing the whole with a bandage, broad enough to reach from sternum to pubes. Before I had done, he complained of feeling very faint, and I gave him to drink a little weak wine and water, which staid upon his stomach. I did not, either before the reduction of the protruded parts, or after, observe any material alteration in the state of the pulse; it was quick and rather small. I had him laid in bed upon his back, and particularly desired he might be kept in that posture. I took twelve ounces of blood from his right arm, and dissolved an ounce and half of magnes. vitr. in half a pint of broth, of which I directed four table spoonfuls to be given every two hours, and left him tolerably easy.

7 o'clock, P. M. Respiration much oppressed, accompanied with a ruttling which occasioned great uneasiness. Abdomen not very painful; he had retained what he had swallowed, but had not had a stool. I administered an enema prepared with magnes. vitr. ℥ij. dissolved in twelve ounces of gruel, with an ounce of oil; it staid with him near five minutes, when it returned, and brought away some feces, which I judged were from the rectum only. As the injection passed up, he expressed great satisfaction, and observed, "it felt very nice." As soon as the bedpan was removed from under him, he vomited the whole of what he had taken, which had been very little, and that only fluid, in addition to the opening medicine; a lumbricus worm, which was dead, was also thrown up. Immediately after the vomiting, his breathing became more free and easy, and he was evidently much relieved by it. As he expressed so much comfort from the clyster, I waited two hours in order to repeat it: I then injected some broth only, which he observed, as before, was "very nice;" it came away almost immediately, without bringing any thing else with it: he fell asleep soon after. I left tinct. opii gtt. xxx. which I desired might be given when he awoke, if at all restless or uneasy. Pulse quick, skin hot, and he complained of thirst.

Deeming it absolutely necessary to keep the stomach as empty, and in as quiet a state as possible, I desired that very little fluid should be given him, and totally forbid solids of every kind.

31st, 8 o'clock, A. M. Had slept pretty well from the time of my taking my leave last night, till two o'clock this morning; after that he became restless and uneasy; his attendant omitted giving the opiate, as directed; pulse quicker than last night, and hard, skin very hot, tongue white, and thirst increased, respiration more oppressed, accompanied with ruttling and a frequent short cough: he made no complaint of pain in the body, except a soreness of the wounded part; had made water two or three times during the night, but had no stool. I administered a clyster of a solution of magnes. vitr. &c. which very soon came away, without bringing any fecal matter with it. He had not vomited since last night, although he had been allowed more to drink than I wished. I took away twelve ounces of blood, which produced faintness, but he did not vomit. I left him betwixt nine and ten o'clock, and ordered the following mixture to be sent for immediately, ℞ magnes. vitr. ℥j. solve in aq. fervent. ℥vj. cola et adde tinct. sennæ ℥vj. M. detur coch. iij. 2ndâ. quaq. horâ donec alvus bis terve responderit. I had been at home above an hour before the messenger came for the medicine, who informed me, that very soon after I had left the house, he had a stool, and before he came off, he had another: I therefore altered the direction for taking the mixture, and ordered two table spoonfuls to be given every three hours.

7 o'clock, P. M. My partner, Mr. A. Robinson, rode with me to see our patient this evening. We found him breathing with great difficulty and ruttling; cough short, frequent and teasing; pulse quick and hard, and every febrile symptom aggravated since morning. Abdomen painful and swelled. The stools he had had in the forenoon were unfortunately thrown out, so that we could not see them, as was at this time most desirable; but the nurse informed us they were quite watery, without any fecal matter or smell; our hopes, therefore, of having obtained a complete passage through the bowels, as we expected to find, were by this account disappointed. He had

thrown up the medicine every time he took it. We repeated the bleeding ad deliquium, and administered an injection as before, which immediately returned without any thing else, and he vomited a considerable quantity of a dark green fluid, very like bile. On examining the bandage round the abdomen, it was found so very tense, in consequence of the distention which had now come on, that we considered it proper to unloose and slacken it, from which he experienced some relief. We left him in a great deal of pain, and in a state of considerable anxiety, though he breathed somewhat easier than before he vomited. I gave him the opiate he ought to have had last night, and we took our leave, very doubtful of his living till morning.

Sept. 1st, 8 o'clock, A. M. I had the satisfaction of finding him much better than last evening. Respiration easier, cough less frequent, and ruttling not so loud; he had no more vomiting; abdomen greatly subsided, and much less painful; external heat abated, and he could bear a little pressure upon it, without complaining; pulse softer, and every other febrile symptom mitigated; he had no stool, but had made water plentifully. Our directions had been strictly followed, and he had been allowed very little to drink; the stomach, therefore, was kept nearly empty, and free from distention. I administered a clyster, which staid near a quarter of an hour, when it came away discolored, and having a strong fecal smell. Fully convinced of the necessity of keeping the stomach as empty and as quiet as possible, I still more particularly desired that he might have very little to drink; and as he still continued very thirsty, I ordered tamarinds to be taken occasionally, instead of any kind of fluid, and directed a tea spoonful of the following electuary to be given every two or three hours: ℞ elect. sennæ ℥j. ol. ricini ℥ss. m. ft. elect. The blood taken away last night exhibited a highly inflammatory appearance; *buff* very dense, and very much contracted or *cupped*.

7 o'clock, P. M. Continues better; and had been tolerably easy during the day. My directions in regard to regimen had been strictly observed, and I found his body in an easy, relaxed, cool state. About two o'clock he had had a stool, which was shown me; it was quite fluid, but in smell and color highly

fecal, in quantity about three quarters of a pint: he had coughed less, and breathed easy, with very little ruttling.—Rep. tinct. opii gtt. xxxh. s.

2d. He had slept so well the early part of the night, that his nurse omitted giving the draught. The cough and difficulty of breathing were increased this morning; pulse hard, febrile symptoms increased. He complained of pain in the left side, and thought himself, as he evidently was, in every respect worse; he had had no stool, had made water plentifully. I repeated the bleeding; in endeavouring to pass up the injection, it failed, and but very little was got up. The body was relaxed, and not painful on pressure. I ordered the electuary to be continued as before; and directed two table spoonfuls of an emulsion, prepared with oil of almonds, with a little spt. of nitre in it, to be given every three hours. He complained very much of hunger, and I gave him half a dozen spoonfuls of boiled milk, which he took greedily. I remained with him half an hour after he had taken it, and it staid upon his stomach. I desired a clyster might be given at two or three o'clock in the afternoon, if he should have no stool before that time.

7 o'clock, P. M. The clyster had been given as directed; it staid with him two or three minutes, and then brought away with it a quantity of *feces* figured, with some hard lumps. He had made but little complaint since I left him, until about an hour ago, when his cough became more troublesome, and he complained of more pain in the left side of his body. Pulse harder and quicker than in the morning; external heat all over the abdomen, as great or greater than I had almost ever felt it. On examining the blood taken away this morning, I found it as inflammatory as that of the evening of the 31st ultimo. I immediately unloosed the ligature on his arm, and took away about ten ounces more, which produced a sensation of sickness, but neither vomiting nor deliquium. I then administered an injection, and, in less than two minutes, he had a copious evacuation of feces figured, with one or two hard lumps. This relieved him considerably; his body, he said, felt lighter: respiration became easier, and his side less painful, pulse softer, and external heat lessened. I gave him tinct. opii gtt. xxx. in

a dose of the emulsion, and desired that he might have the draught, omitted the night before, towards morning, if he should be very restless and uneasy. Cont. emuls. et elect.

3d, 8 o'clock, A. M. About an hour after I left him last night, he retched very violently, but did not vomit, after which he became easy, and slept well and sound till three o'clock in the morning. Cough and pain in the side abated, and in every respect much better than last night; respiration free; the blood last taken away quite lax and florid, showing not the least signs of inflammation; had had no stool, but made water plentifully. Cont. emuls. et elect. Rep. enema. I desired he might be allowed a little boiled milk during the day, without bread in it; solids totally forbid.

7 o'clock, P. M. Passed a quiet, easy day, having slept the greatest part of it. He became restless, and rather uneasy, about the same time as last evening; more feverish than in the morning, and abdomen more painful; cough rather troublesome; no stool nor vomiting. His bed having now become very uncomfortable, I had him carefully taken out, to have it made afresh. I administered an enema, which staid with him ten minutes, and then came away, without bringing any fecal matter with it. I gave him tinct. opii gtt. xxx. with his emulsion. Soon after taking it, he retched, but did not vomit, after which he thought himself easier.

4th. Mr. A. Robinson visited him this morning, and found him pretty easy; he had passed a good night; no stool nor vomiting. He was ordered for diet today, a little hasty pudding, with treacle, for he now made frequent complaints of hunger. A messenger came in the evening, to inform us, he had been easy all day, but was not quite so well when he left him. Cont. emuls. et elect. et omitt. haust. anod.

5th. Had passed a quiet, easy night, and slept well; free from pain and fever; had a stool yesterday, and one this morning, which was more fluid than the two last, but quite fecal; he coughs sometimes, and expectorates with ease a quantity of thick purulent-like excretion. I removed the dressings from the wound, which were loosened round the edges by the discharge; it looked very well; the sides were not quite approximated betwixt the sutures, the spaces being filled up with

healthy looking granulations; none of the ligatures had separated. I dressed with dry lint and straps of adhesive plaster. He yesterday had taken hasty pudding at three different times, to the quantity of a saucer full in all, which he liked much, and which had agreed with him very well. He had no nausea or vomiting. The same diet to be used today; in greater quantity, if he likes it.

6th and 7th. Going on in every respect very well; had two full evacuations on the 6th. In addition to his hasty pudding, he had been allowed some mutton broth; he also ate a very small piece of mutton. I dressed the wound again today as before, which looked very well: its sides were considerably approximated in every part since the 5th ultimo.

9th. Dressed the wound; one or two ligatures had separated, and, as the rest produced some little ulceration, I took them quite out. In every respect mending daily.

11th. Wound healing rapidly. I allowed him today to get up, at which he was not a little pleased; he soon dressed himself, and walked down stairs, by my taking hold of his arm. Bowels quite open and regular.

20th. Rode on horseback to Ripon, to have the wound dressed, the whole of which was healed, except a very small portion at top and bottom. In every respect very well, and regaining his usual healthy appearance. Appetite and digestion good; cough has left him.

23d. Quite well. The stomach, distended at the upper part of the wound, appears much below its natural situation. I recommended him to wear, for some time, a broad belt, made of stout woollen cloth, round the injured part of the abdomen. He carries himself quite erect, which he did even two or three days after leaving his bed.

REMARKS.

It may be matter of surprise and doubt to some, that the *stomach*, as well as the intestines, should have protruded through a wound in the abdomen, situated as described in the case just related; and it may not improbably be conjectured, that some portion of gut had really been mistaken for that viscus.

The *great arch*, with its *appending omentum*, were, how-

ever, too plain and evident to admit of any error of this sort; and my partner, Mr. A. Robinson, on seeing its form externally on the evening of the 31st, distended so low, had no doubt of the fact. Dr. Caley and Mr. Lucas both saw the lad at Ripon, on the 20th, and both saw the stomach distended much below its proper situation: its protrusion, however, is readily accounted for by the manner in which the boy was conveyed home after the accident.

Instead of being laid on a hurdle, and placed upon his back, he was taken before a man on horseback; at this time, but a small portion of gut had protruded, and a handkerchief was given him, with which he was desired to press upon the wounded part, which he, quite overcome with fright and sickness, was unable to do. The horse had proceeded but a little way, before he felt more intestine pushing out, till at length such a quantity had protruded, as by its weight was sufficient to drag out the remainder, and in this way the great arch of the stomach was drawn down. He was carried in that manner two or three hundred yards.

Nov. 20th. Mr. Lucas saw the boy with me today. The stomach still remains much below its natural situation, so much so, as, with the bulging out of the intestines around the wounded part, to give that side of the abdomen a very irregular, prominent appearance.

He has been very well in every respect ever since his recovery; his appetite and digestion are both as good as formerly; and he is capable of induring labour as well, and to as great a degree as before the accident.

Ripon, 3d December, 1808.

Merriman's Case of Suppression of Urine after Parturition.

From the Edinburgh Medical and Physical Journal, for 1810.

Mary Chapman, twenty-one years of age, a patient of the Westminster General Dispensary, residing in the neighbourhood of Berwick street, Soho, was taken in labour of her first child, on the 13th of October, 1809. Her waters *broke* on the preceding day, but the pains of labour did not come on till

about twelve o'clock at noon, of the 13th. From this time they continued frequent and violent for twelve hours, when the strength of the poor woman, and the patience of her friends being exhausted, they requested that the midwife should send for further assistance, and I was accordingly called up to her, between one and two o'clock in the morning, of the 14th.

When I arrived at the house, the midwife informed me, that the child's head had fallen so low in the pelvis, that the vertex was actually protruding through the *os extremum*, and that she expected it to be born in a few more pains: she acknowledged, however, that the pains were become less efficacious during the last two hours, and that the labour had not advanced since; and she conjectured, with much appearance of reason, that this diminution of uterine action was occasioned by the bladder being full of urine, as the patient had made no water during the whole continuance of the labour. On hearing this report, I laid my hand upon the abdomen, and clearly distinguished by the feel, that the bladder was very full; I concluded, therefore, that there would be nothing more to do than to introduce the catheter, and empty the bladder, after which it was to be expected, that the pains would recover their former strength, and that the delivery would be accomplished without any further difficulty.

The patient being, therefore, placed in a convenient posture, I proceeded to introduce the catheter; in doing which, I found that the child's head was, as the midwife had stated, so low in the pelvis as to render it almost certain that a few pains would expel it; but on passing my finger into the vagina, it (the vagina) felt so excessively hot and burning, as convinced me that the delivery ought not to be trusted to the effects of nature, but that the child must be removed with all proper expedition, or, otherwise, there was great reason to apprehend that mortification and sloughing of the vagina would ensue. It was, however, first necessary to draw off the water; I therefore introduced the catheter as gently as possible, (notwithstanding which, it gave her very great pain, from the inflamed and irritable state of the *meatus urinarius*,) and drew off nearly a quart of very highcolored urine. In a short time afterwards, I introduced the forceps, and delivered the woman of a female

child, which was restored to life with considerable difficulty. In rather less than twenty minutes, the placenta was expelled, and a profuse discharge from the uterus took place at the same time. She had now an opiate given to her, and I left her with very strict injunctions respecting her diet and management.

Before twelve hours had expired, I received information that this patient was suffering great pain from a constant urgency to make water, and an inability of voiding it. I, therefore, again had recourse to the catheter, and emptied the bladder. The orifice of the *meatus urinarius* was swollen and tender, and the passing of the instrument occasioned her much pain; but the sense of heat and burning in the vagina was much diminished.

The usual emollient, aperient, and anodyne remedies were employed to relieve her complaint; but it was necessary to have constant recourse to the catheter for eight or nine days, at the end of which time she began to pass her urine naturally; but she now entirely lost the power of retaining it, and suffered the various inconveniences which accompany an incontinence of urine. I began, therefore, to fear that an ulceration had taken place, and had made a communication between the bladder and vagina; but after a very accurate examination of the parts on two different occasions, I was fully satisfied that no such accident had happened. During the course of ten or twelve days, this continual discharge of urine continued, notwithstanding the use of a variety of remedies that were employed to counteract it; at length I determined to try the effect of the uva ursi, and accordingly prescribed a scruple of the powder to be taken three times a day. After a few days, Mrs. Chapman thought she derived benefit from this medicine, and was, therefore, very willing to persevere in its use: It was continued for a fortnight longer, by which time the incontinence of urine was removed, and her health and strength restored.

It has been laid down as a rule in practice, and it is one of those rules, which, being founded in reason and experience, ought not lightly to be deviated from, that the head of the child should be in a situation capable of being delivered by the forceps, for at least *six hours* before they are had recourse

to. As a mean of guarding against a rash and unnecessary use of instruments in the practice of midwifery, this rule is highly commendable; but a rigid observance of it, in the case I have related, would have proved extremely injurious, if not fatal, to the patient: as it is apparent, that a very high degree of inflammation in the vagina, and parts adjacent, was just upon the point of taking place: and had the head of the child been suffered to remain there much longer, so much inflammation must necessarily have come on, as might have proved uncontrollable. It may be said, that when the bladder was evacuated, the pains would have returned; but it is possible, that the return of uterine action might not have taken place for many hours, and in the mean time, incalculable mischief would have been going on; upon the whole, therefore, I am persuaded, that this was one of the cases in which it was proper to break through a useful rule in practice.

A relaxation, or want of contractile power in the *sphincter vesicæ*, is sometimes observed after a suppression of urine, arising probably from the frequent introduction of the catheter, and frequent dilatation of the parts; but the incontinence of urine rarely proceeds to so great a degree as in this patient, nor does it last so long. I was led to the use of the uva ursi from the celebrity it formerly attained as a remedy in the disorders of the urinary organs in the practice of *de Haen*, and other German physicians. A blister over the sacrum would, perhaps, have been a more speedy remedy, but the constant discharge of urine had produced so much cutaneous inflammation all over the lower parts of the body, as to render the application of a blister unadvisable, at least, in the first instance; and, as the woman was daily mending, under the use of the uva ursi, I was afterwards unwilling to discontinue it.

The uva ursi, as a remedy in disorders of these organs, is almost entirely fallen into disuse. It has experienced the fate of many once celebrated and fashionable articles of the materia medica; having at first been too highly and unjustly extolled, it has now, perhaps, sunk into unmerited oblivion. Lewis, in his "Experimental History of the Materia Medica," says of it, "In all cases that have come to my knowledge, it produced great sickness and uneasiness, without any apparent benefit,

though continued for a month." It is probable, that in these cases, the uva ursi was given in too large doses, for I observed no such ill effects in the doses I prescribed to Mrs. Chapman.

An account of a case of Lithotomy, with remarks.

BY THOMPSON FORSTER, ESQ.

Surgeon on the staff of the army, and senior surgeon to Guy's hospital.

From the Medico Chirurgical Transactions, for 1809.

IT has been somewhere well observed, that a physician or surgeon of great experience, might write a very useful work, if he would have the courage to give an account only of such methods of cure, and such cases as he had found to be ineffectual, or unsuccessful. It is with this intention, and a firm persuasion of its justness in my mind, that I now venture to communicate the following case and remarks to society.

Henry Brand, a sickly looking boy between seven and eight years of age, was admitted into Guy's hospital, the sixth of August, 1804. I learned from his mother that during the preceding year he had frequently complained of an uneasy sensation, and difficulty in making water, which soon brought on great pain, fulness, and heat over the whole of his belly, attended with thirst, restlessness, and headach; she observed also, that these fits frequently lasted with great violence during two, and sometimes three days.

Some of the patient's symptoms being those of a calculus in the bladder, and his belly being much enlarged, he was ordered, during the first week after his admission, two gentle purgatives, preparatory to my passing the sound. Upon examining the penis for this purpose, I found the prepuce much elongated, thickened, and contracted, so that it was with difficulty I could find the orifice of the urethra, and when this was accomplished, the sound met with impediments from strictures; these also were overcome, and the sound, on entering the bladder, immediately struck against a stone, and by a little

movement of the instrument soon passed by the side of it; but had no range, being precluded from lateral motion by the stone on one side, and the coats of the bladder on the other. A mild purgative, and the warm bath were ordered, to prevent the effects of irritation, which were likely to arise from the preceding difficulties, and in a few days the patient voided his urine much the same as before the examination.

As many of his complaints differed from the common symptoms attending a calculus in the bladder, I determined to defer the operation of lithotomy, till I should have an opportunity of seeing some of those paroxysms before mentioned, which his mother had stated to be of the most distressing kind; I therefore directed a gentle purgative for him twice a week, and soda water for his common drink.

During the fortnight he was under this plan, I observed (even when he was the most free from pain) that his pulse was quick, and feeble, his appetite uncertain, and that a general debility pervaded his whole habit; his urine was sometimes turbid, and at others, deposited a white ropy mucus; this mucus generally succeeded slight pains in his loins.

About this time I had an opportunity of observing the train of symptoms, which his mother seemed to have accurately described; they came on nearly in the following order: anxiety, restlessness, itching and heat along the course of the urethra, more particularly at the neck of the bladder; pain and difficulty in making water; heat, and distention of the abdomen; very quick and small pulse; slight nausea; increased difficulty in voiding his urine, which was soon followed by a complete suppression, so that, for four hours in the succeeding day, neither bougie, nor catheter could be passed; the warm bath and clysters gave relief, but it was four days before he returned to his usual state, and even then it was with increased debility, and a peculiar anxiety, that gave the impression of the child's constantly feeling some internal distress.

About ten days after his recovery from this paroxysm, and when he was more than usually free from irritation, I made particular observation on the quantity of urine he generally voided at one time, which never exceeded an ounce and a half,

and on his power of retaining it at will; and I found that the quantity (even for eleven minutes after the usual excitement to make it had taken place) never exceeded two ounces, from which I was led to conclude, that the capacity of the bladder was considerably diminished, but that it had not lost its voluntary power of retaining the urine, or of propelling it.

I did not propose the operation at this time, from the apprehension of the consequences that I feared might ensue from such great susceptibility to inflammatory action, and from the weak state to which the patient was reduced, and I was also not without a hope, that the powers of medicine might lessen the tendency to inflammation, and restore him to a little better tone and strength to bear such an operation.

In this, however, I was disappointed; it would therefore be tedious and intruding unnecessarily on the time of the society, to go through the detail of medicines prescribed; suffice it to say, that they were found inadequate, either to lessen the violence of his fits, or to augment his strength, for in the month of October he had a more than usually violent attack, that lasted him five days, and reduced him to the lowest ebb.

It was a few days after this last violent attack, that I first perceived his urine dribbled from him involuntarily, that he had a constant sense of smarting in the whole course of the urethra, and that he had lost all power of propelling the urine forward, or of retaining it. Even the action of the abdominal muscles, as in straining, produced no water from the bladder.

Here a new symptom presented itself to our notice, which is worthy of our most serious attention, namely, that of an inability in the bladder to act upon its contents, arising probably from the repeated inflammatory actions to which it had been subjected; yet the general irritability of the system remained as great as ever, and it seemed even to increase with his diminished strength.

The patient being in this wretched state, a consultation was held on the second of November, when a retrospect of his past symptoms, and a careful examination of his present ones were fully considered, and it was determined that the operation should be immediately performed, though it was perfectly

understood to be under the pressure of the most disadvantageous symptoms; yet it was thought to hold out some faint hope of relief; and it seemed certain, that, unless it was had recourse to, he must inevitably sink, worn out by constant pain and misery.

I performed the operation next day. The obstructions in the urethra before mentioned, being with some difficulty overcome by the staff, an impediment to the full introduction of the gorget occurred, that certainly arose from the beak of the instrument coming directly against the stone, which prevented its farther introduction into the bladder, till it evidently slipped between the stone, and the coats of the bladder, where it was tightly wedged in; however as I could feel the stone with my finger at the end of the gorget, I passed the forceps, and, with considerable difficulty, expanded them sufficiently to lay hold of the stone, which broke with moderate compression. About two-thirds of it came away in the forceps, preserving so evidently its convexity, as clearly to give the form, and an idea of the quantity remaining in the bladder. This being but small, was soon removed, and the patient taken to his bed.

Symptoms of inflammation soon manifested themselves, and extended to the abdomen, loins, and thorax. The warm bath, poppy fomentations, leeches, clysters, &c. were carefully, though ineffectually, administered, as the patient died on the fourth day after the operation.

On examining the body immediately after death, the belly was observed to be of a dusky hue, emphysematous, and distended. Not getting permission at that time for farther investigation, I was obliged to wait ten days before I could give the appearances of the interior parts, which were as follows:—On dividing the integuments, the same dusky color was noticed, which is a morbid tint, well known to those who are conversant in inspecting diseased parts, and perfectly distinct from that which is the result of putrefaction after death.

As nothing peculiar presented itself in the viscera in general, I shall confine my account to the state of the kidneys, bladder, and rectum. The left kidney was very small, loose in its texture, and its ureter scarcely discernible; the right kidney

was enlarged and flabby, its ureter about the size of a goose quill, and much incrusted with calcareous matter, where it entered the bladder. The bladder was very much diminished; hard, and resisting to the touch. On the left side was discovered the wound made in it by the introduction of the gorget; and a section being made through the bladder on the right side, and a portion of it removed, brought to view the great thickness of its coats, its lessened cavity, and a considerable deposit of calcareous matter adhering to the inner surface. The rectum was nearly as usual, except only, that it participated in the inflamed and discolored appearance of all the neighbouring parts.

From the foregoing history of this case, and from studying the morbid appearances, some useful observations are deducible, that may tend to strengthen the judgment of the young practitioner, and assist him in forming his opinion, and in reasoning from the symptoms up to their causes.

To elucidate this more clearly, it may not be improper to make a short recapitulation of some of the leading symptoms. In the first place, the unusual susceptibility to inflammatory action, that showed itself so often over the whole belly, is a symptom not very frequent, and when it does occur, is rarely overcome; moreover it appears from this case, that each succeeding inflammatory attack made such havoc in the constitution, as to bring on worse symptoms, and increased debility. Therefore, when so alarming a symptom has clearly manifested itself, with all its train of consequences, and when the primary cause has decidedly been found to be a stone in the bladder, I should be inclined to allow but a short time for a trial of the powers of medicine to strengthen the habit and to allay such irritation, but should propose the operation at an early period, while the bladder retained its power of acting on its contents. I am aware that this would be to perform the operation under very unfavourable circumstances, yet the case before us sufficiently shows, that there is no reason to expect any amendment can take place, whilst the original cause of the mischief remains; and it may also be observed, that in such instances, each succeeding fit renders the bladder more likely

to be deprived of its muscular powers; and when such an event has actually taken place, great doubts may arise as to the propriety of venturing on the operation at all. For if the immediate cause of this privation of action should proceed either from local paralysis, or from the deposit of coagulable lymph, great impediments in either case will probably arise to obstruct the progress of healing, if not to subvert its first principles; should it arise from the former cause, the want of nervous energy might leave the wound in statu quo, till nature were quite exhausted; and if from the latter, (that is from the deposit of coagulable lymph) the muscular fibres of the bladder might be completely blocked up by such an accumulation, and the process of healing would of course be greatly impeded by this mechanical pressure, so that, though the first principles of the healing process might not be destroyed, they would be at least so far weakened as to leave great doubts of their possessing sufficient power to shoot forth the new substance necessary to complete the healing of the parts.

From this view of the case, it would seem, that, after the inability of the bladder to act upon its contents has shown itself, a very different practice must follow, from that where the bladder possesses its powers of expulsion, and retention; in cases where these remain, I have recommended proceeding early to the operation for the reasons I have given, but in cases where the bladder has lost those powers, I do not think the operation advisable, or that it would be attended with success.

I must acknowledge that my reflections on this case have influenced my practice, and I have since cut, at an early period, one patient, in whom the extreme tendency to extensive inflammatory action showed itself, nearly in as great a degree, as in the instance I have related; the inflammation from the operation was considerable, but it was moderated by the usual remedies in a few days, and in five weeks the patient was perfectly well.

Since that time I have refused to cut two patients, where the debility was considerable, and where the action of the bladder was entirely lost.

I have thus given to the society a narration of the symptoms, progress, and fatal termination of the case in question, and of the appearances on dissection; and I am not without hopes, that the information to be derived from it may have some beneficial effect in the future treatment of similar cases. The object I have had in view, by this communication, will then be completely attained.

T. FORSTER.

Southampton Street, Bloomsbury-sq. Jan. 7, 1806.

An account of three cases of sudden death, with the appearances on dissection, and some additional observations.

BY THOMAS CHEVALIER, ESQ. F. R. S.

Surgeon to the Westminster general dispensary, and surgeon extraordinary to the prince of Wales.

From the Medico Chirurgical Transactions, for 1809.

AT a former meeting of the society I related the cases of three persons who had died suddenly, and whose bodies I had been called on to examine; and as the immediate cause of their death appears to be one not generally noticed by anatomists, I have great pleasure in complying with the request of the society by detailing the circumstances again in this paper.

The first case occurred in September, 1806, in Mrs. C. a young lady at Greenwich, who while talking with her husband complained of being faint, and desired to be laid down. She was led to the bed, and was supposed to fall asleep, as he still continued to support her. In about twenty minutes he rang for the servant, who, on entering the room, exclaimed—"My mistress is dead!" So it unhappily proved; and I was desired on the following day to investigate the cause of this most affecting event.

The head was first opened, and the brain carefully dissected; but not the smallest vestige of disease could be perceived in any part of it.

On examining the trunk of the body, no morbid appearance presented itself in any of the viscera. The uterus was in a state of impregnation, so early, that the fissure in the ovarium, from which the ovum had escaped, was yet distinctly to be seen.

This apparent absence of any disease, led me to pay more particular attention to the state of the heart; on opening which, I was much struck with its extreme flaccidity, and the entire emptiness of all its cavities, in neither of which was the smallest quantity of blood. There was blood however both in the vena cava, and in the pulmonary veins.

I had never, on any former occasion, seen the heart so completely empty. It is not unusual to find the ventricles shut up by muscular contraction, so as nearly to exclude blood from them; but here both auricles and ventricles were destitute of it, without either of them being in a contracted state.

It therefore appeared to me that this lady had died from a syncope, or rather, asphyxia, of a peculiar kind; in which the action of the heart had ceased for want of the regular supply of blood from the returning vessels.

A few weeks after this occurrence, I was again called to Greenwich, to examine the body of an elderly man, who had recently recovered from a maniacal affection, and who, after falling suddenly from his chair, breathed short for a few minutes, and then expired.

I went to this dissection fully prepossessed with a persuasion that he had died of apoplexy; and I was much surprised, when, on the most careful examination of the brain, I could find no morbid appearance, except an ossification of the falx, which must have been of long duration, and though it might in some degree account for his mania, could not at all account for his death.

I therefore proceeded to examine the body; for immediately the circumstances of the former case occurred to my mind, and also to Mr. Harrison, who had been called to both patients, and was present at the dissections.

The state of the heart was exactly similar. All the cavities

were empty, but uncontracted; and the vena cava was also empty to the distance of several inches from the auricle. No other appearance could be detected in any viscus, by which death could at all be accounted for.

The last case occurred lately in a lady who died shortly after having been delivered of twins. I was informed she had for some time entertained apprehensions that she should not survive her delivery. After the birth of the second child she appeared a good deal exhausted, and as the discharge of blood was very moderate, the accoucheur thought it best to defer the extraction of the placenta. She recovered a little; but about two hours afterward grew suddenly faint, breathed short, and died in about half an hour.

In this case I did not examine the head, nothing having existed to excite a suspicion of mischief there. All the viscera were free from disease. The uterus contained the placenta with a small quantity of blood. But all the cavities of the heart were in a state of relaxation and completely destitute of blood. There was no blood in the vena cava near the heart, and the emptiness of its ascending branch extended as low as the iliac veins.

In all these cases the heart itself, and its valves, were free from any disease or alteration of structure.

I have hitherto been able to find only two similar instances recorded by medical writers. One of these is mentioned by Bonetus, Sep. Anat. vol. i. p. 883. A woman, more than forty years of age, complained suddenly of dimness, noise in the ears, and headach. She soon after lost her voice and pulse, and died in four hours from the attack. She had previously laboured under pectoral complaints, and on opening the body, the lungs were found coated with coagulable lymph, and abounding with pus in their substance. But the most remarkable circumstance, and which alone explained the manner of her death, was, that neither in the heart, nor the adjoining vessels, was a drop of blood to be found. "Neque cor, neque vasa "adsita, vel guttam sanguinis continebant."

The other case is recorded by Morgagni, Epist. 48. Art. 44. and very much corresponds with the third of those I have related above. It was of a woman, who, during her pregnancy,

had some presentiment that she should not survive her labour, although she had already been the mother of several children. She was delivered of a daughter; but the placenta did not come away. An hour afterward, she was suddenly seized with dejection of spirits, coldness, and loss of pulse, and died in an hour and an half from the attack. On dissection the heart was exceedingly flaccid; scarcely any blood was found in the auricles or right ventricle, and none at all in the left. "Cor supra quod dici possit flaccidum, nihil fere sanguinis in auriculis, dexteroque ventriculo, nihil autem prorsus in sinistro continebat." The state of the adjoining bloodvessels is not noticed.

The disease I have now described may perhaps be properly termed *asphyxia idiopathica*. The essential circumstances of it evidently denote a sudden loss of power in the vessels, and chiefly in the minuter ones, to propel the blood they have received from the heart. In consequence of which, this organ, after having contracted so as to empty itself, and then dilated again, continues relaxed for want of the return of its accustomed stimulus, and dies in that dilated state.

But it is remarkable that death was not produced instantaneously in either of these cases. So that it is probable the larger veins continued their office a little while after the attack; and that blood flowed from them for a short time, into the heart; feebly indeed, and in small quantity, but still enough to keep up a little action in it. It is also probable that the debilitated state of the extreme vessels, though sudden and great, was not complete at first; especially in the last of the three cases I have related, and in those quoted from Bonetus and Morgagni: but the action of the heart gradually failing for want of supply, that of the larger arteries would soon fail also, for the same reason, and death must then follow of course.

The flaccid state of the heart is probably produced by its own vessels partaking of the general debility, and thus inducing an atonic state of its muscular fibres.

The weakened state of the circulation through the pulmonary vessels will account for the short, or to speak more correctly, the feeble breathing, which commences with the attack, and continues till its termination.

Although I feel quite unable to account satisfactorily for the first production of such a disease, it nevertheless appears to me that these histories lead to some important practical conclusions. Such as have occurred to myself I shall take the liberty to point out. Others may probably be supplied hereafter by practitioners, who, aware of the nature of the disease, and called in immediately on its commencement, will direct their attention to its various circumstances, more particularly than may hitherto have been done.

The impropriety of taking away blood in such a case, is, I think sufficiently evident; nor indeed does it seem likely that an attentive practitioner would confound it with any in which that evacuation is called for. The state of the pulse, and particularly of the respiration, would be a sufficient distinction, and clearly point out the necessity of the most prompt and active measures to stimulate the extreme vessels, to accelerate the returning blood, and to excite the nervous energy.

It would therefore be proper to lay the patient as speedily as possible in the horizontal posture, and to give internally some highly stimulating liquid; as brandy, wine, ether, volatile alkali, &c. and these should be given in a tepid state, lest their coldness, when first swallowed, should retard their salutary influence on the extreme vessels and nerves of the stomach. Spices may also be employed, and in this, as in many other cases, would probably be borne in larger quantities than are commonly exhibited. A scruple of the Pulvis Aromaticus, for example, may be given for a dose. Brisk friction of the surface of the body, and particularly of the extremities, should be employed, and the patient covered with warm blankets, taking care however to leave the face open, and on no account to impede the freest possible access of pure air to the lungs. A hot bath might be of use in some instances; and it would probably be more effectual if it were prepared with salt water, or strongly impregnated with some stimulating ingredient, as capsicum, pepper, ginger, &c. But some discretion is certainly requisite in the employment of a hot bath, where great debility prevails, lest the exertion and fatigue attending its use, should increase the irritability in too great a proportion, and exhaust the remaining strength.

A pint or more of camphorated mixture thrown up warm, as an enema, by means of a syringe, might also be of use. Some ether, or tincture of castor, or assafœtida, might perhaps be added with advantage. But in this, as well as in the employment of the warm bath, care must be taken not to over fatigue the patient; for no debility will be found more insuperable on many occasions, than that arising from fatigue. So that these remedies will perhaps be most useful after something stimulating has been given by the mouth, and is beginning to produce its effect.

Other means may be suggested by the particular circumstances of different cases; and where the nature of the attack is known, one cannot but hope it may in some instances be remedied. It is with this view I have brought the subject before the society, and I shall feel highly gratified if these imperfect observations should be the means of bringing forward more complete information respecting it, than I have been able to impart.

Some time after I had delivered to the society an account of the above cases, I was conversing on the subject with my friend Mr. Charles Woodd, of Edgeware road, who informed me that he had recently met with two cases which appeared to him very extraordinary, and which he could not help considering to be of a similar nature to those I had mentioned. When he related them to me, I was entirely of that opinion, and requested he would favour me with an account of them in writing, that I might lay them before the society. This he has obligingly done, and as both cases terminated favourably, I have no doubt the society will consider them as a valuable addition to the paper already alluded to.

"Case I.—At six in the morning of August 28, 1808, I was desired to visit Mr. A. who had been attacked about one o'clock, with an uneasy sensation in the thorax, difficulty of respiration, and a sense of extreme lassitude. I found him with a pulse hardly perceptible, and not more than twenty-nine in a minute, although the vessels of the skin, and tunica conjunctiva were loaded with blood. Previous to my being sent

for, he had taken three large spoonfuls of Reymer's tincture (a very stimulating preparation), and one bottle of a mixture which he generally kept by him, having been subject to spasms, and which contained mist. camph. ʒvj. sp. lav. c. ℥ss. sp. ammon. c. ʒiij. The anxiety still increasing, he took three tea spoonfuls of what appeared to be camphorated liniment, and some brandy. Notwithstanding all this, the action of the heart had decreased. When I saw him, the sense of fainting and difficulty of breathing became almost insupportable. I immediately gave him a tea spoonful of ether vitr. and repeated it every ten minutes, till he had taken an ounce, but without the least effect, either on the pulse or his general feelings. I therefore continued to give more stimulants; and by eleven o'clock he had taken, in various preparations, in addition to what has been before mentioned, ammon. ppr. ʒss. t. opii gtt. 40. tinct. castor. ℥ss. ten drops of the medicine called the black-drop; and two drachms of the sp. ammon. comp. with camphor mixture. At twelve, an enema, with sixty drops of tinct. opii, was administered, and two drachms more of ether had been taken. Friction had been used along the spine with ether and volatile spirit, and also over the sternum. The pulse now became more perceptible, and gradually increased in strength till two o'clock, when he went to sleep, but with the breathing still laborious. At four o'clock he awoke; a blister was applied to the sternum, and he took a draught every four hours, composed of gutt. nigr. gtt. v. aq. ammon. acet. ʒij. mist. camph. ℥j. sal. c. cerv. gr. iv.

"On the following day he felt nearly recovered; nor did all this quantity of stimulating medicine produce the slightest degree of fever. He has ever since continued in health."

"Case II, was much slighter. Mr. W. after a long walk, was suddenly seized with great difficulty of breathing and faintness, so as to be unable to stand, or speak distinctly. He was immediately taken home, and I found his face suffused with blood, his breathing difficult, with great anxiety, and his pulse scarcely perceptible. He imagined himself dying. I gave him immediately two drachms of sp. ammon. c. and in ten minutes one drachm of ether, and thirty drops of tincture of opium. In about twenty minutes he was relieved. A blister was how-

ever, applied to the chest, and in the course of the evening he took a mixture composed of conf. opiat. ʒj. ammon. ppr. ʒss. aq. cinnam. ℥iij. The next morning he was much better, and has ever since continued well."

The latter of these two cases may at first appear only an attack of common asphyxia; but its affinity to the rest is, I think, distinctly marked, by the suffused appearance of the countenance; which evidently showed the detention of the blood in the extreme vessels. The former case is however, more remarkable; and its favourable termination seems to be principally owing to Mr. Woodd's judicious and persevering exertions.

December 13, 1808.

Experiments relative to the Influence which the Nerves of the Lungs exercise on Respiration.

Read before the National Institute, by M. Dupuytren, Chief of the Anatomical Department in the Medical School of Paris, Assistant Surgeon to the Hotel Dieu, &c. &c.

Translated for the Eclectic Repertory.

The memoir which I have the honour to present to the institute, contains the history of some experiments made with the view of determining the kind and degree of influence of the vital action of the lungs, in the changes which the venous blood undergoes in passing through these organs.

For some years, two opinions have prevailed with respect to the primary cause of respiration in animals. According to one opinion life is indispensable to the exercise of respiration as it is to all the other vital functions: the air might be even taken into the chest, and come in contact with the blood without producing any manner of change if the lungs were not endowed with life.

Agreeably to the other opinion, when the air has pervaded the lungs, and the venous blood has passed through the pulmonary vessels, the action of chemical affinities is sufficient for respiration to take effect through the very delicate membranes which separate these two fluids.

This second opinion, supported by some experiments has been adopted by all those who would rather rest their ideas on

facts, however insufficient, than upon assertions totally devoid of proof.

In this state of the science the advocates of the vital causes, and the partisans of the chemical causes, as applied to the explanation of the phenomena of life, will consider the question which I propose to examine, as already solved according to their respective principles, but it has not been by direct fact. Not but that experiments analogous to those which I am going to relate have been tried; but as almost all of them have been made with intentions very different from ours, it does not appear that they ever imagined that result which we have obtained.

Thus Haighton, Cruikshank, Meyer and others, performed the division of the eighth pair of nerves, which furnish those going to the lungs, with the view only of observing the regeneration of the nerves; and any one may be convinced on perusing the history of their experiments, that they did not even inquire into the cause of the death of those animals in whom they had divided at the same time the two nerves of the eighth pair.

Bichat is the only author I am acquainted with, who has attended to the influence exercised by the brain, by means of the eighth pair of nerves, in respiration, and I must not conceal, that he has concluded from his experiments that this organ has no direct influence on this function. But I must also observe, that as his principal object was to determine if it were by the cessation of the action of the muscles of the chest, or by that of the lungs, that death takes place after injuries of the brain; he could not fail to discover, what is the fact, that death occurs more readily in this case, from the interruption of the motions of the chest, than from the ceasing of life in the lungs. If Bichat had not confined himself to this first conclusion, he would have recognised a second means of the brain's influence on the lungs, that which I shall endeavour to demonstrate.

Our object being to determine the effects of life on the changes which the blood undergoes in the lungs, it would be important to discover the means of destroying, or at least of completely suspending it in these organs; from whence it

would be easy to infer the extent to which life is necessary to the exercise of respiration; but as this destruction or suspension could not be accomplished without destroying the life of the animal, we were obliged to recur to other means.

It is well known that in the higher order of animals, life results in all the parts from a certain number of actions, for example, of those of the nerves, arteries, &c. and that it cannot long exist when any of these are destroyed. But it is evident, that if by destroying one of these conditions by which life exerts itself in the lungs, respiration should cease, we could not hesitate in attributing to the intire life, a power equal at least to one of these conditions. In pursuing this idea, we considered the nerves of the eighth pair which furnish those of the lungs, as being the organs by which the life of the lungs might be modified without the neighbouring parts being in the least affected.

It is true where the change in the pulmonary nerves might not have induced a corresponding one in respiration, nothing could be inferred from these experiments against the influence of life on this function; it might still be imagined that a greater impression made on the life of the lungs, would have stopped respiration; but if the latter should be considerably affected, or entirely suspended by the mere lesion of the pulmonary nerves, the conclusions from our experiments in favour of the influence of life on respiration, would be correct, and this is the fact as we shall presently show.

Before we enter on the detail of these experiments, we beg leave to premise some well known facts respecting respiration. This function consists in the intimate and reciprocal action of the air on the blood of animals, for the purpose of rendering this latter fluid proper for exciting and nourishing the body. In man and in many animals this function is accomplished by means of two distinct organs; one muscular, and intended for alternately drawing the air into the chest, and again expelling it; the other furnished with cells and vessels for receiving the external air, and transmitting the blood returning from all parts of the body. Respiration takes place only in the lungs, the other recited organs are only means employed by nature for facilitating this operation.

The lungs have not as some organs, a separate pair of nerves. Those which they receive are chiefly derived from the eighth pair. These two nerves arise from the sides and beginning of the medulla oblongata; immediately upon leaving the skull they give several branches to the pharynx; they run down the front and sides of the neck, and furnish in their route the superior laryngeal nerves, and some filaments destined to the heart. They then penetrate the chest, where they at first furnish some branches which uniting with branches from the great sympathetic form the anterior pulmonary plexus. They afterwards give off the inferior laryngeal nerves, and soon after numerous filaments, the reunion of which forms the posterior pulmonary plexus, whence is derived the greater part of the nerves of the lungs.

The pulmonary nerves are not distributed to the whole extent of the lungs; but according to the observation made by Scarpa, in the explanation of the fifth Table in his excellent work on the nerves of the heart and lungs, they accompany the bronchia and their divisions, to which they are closely applied, and seem much less intended for the parenchyma of the lungs, than for the sides of the air tubes and the membrane which lines them.

After giving rise to this plexus, the nerves of the eighth pair descend along the œsophagus, enter the abdomen, and are distributed to the stomach, liver, gallbladder, spleen, duodenum, and many other parts through the medium of the solar plexus.

The lungs receive, beside the branches sent from the eighth pair, other nerves, which arise from the superior cervical ganglions, the median and inferior ganglions of the great sympathetic, and from its first thoracic ganglion. These nerves, in some degree supernumerary, serve to explain one remarkable circumstance in our experiments.

We commenced these experiments by laying bare in a horse the nerve of the eighth pair, by an incision made on one side of the neck; and after separating this nerve from the great sympathetic to which it is only bound by loose cellular texture, we divided it without the animal expressing much pain, and without the respiration being sensibly affected. We observed

only a slight disorder in the circulation, his lips were inclined to a violet color, but when freed from his trammels he rose, walked, ate, and drank as usual; in short, he suffered no serious inconvenience from the division of the nerve of the eighth pair, and the wound in his neck healed in a short time.

Some days after having performed the division of the nerve of the eighth pair, on one side, we threw down a Hungarian horse, a dapple gray, aged between seven and eight years, of tolerable strength though glandered. We began by dividing one of the nerves of the eighth pair, and he gave no greater signs of pain or alteration in the pulmonary functions, than we had observed in the preceding experiment; but no sooner did we seize the other nerve of the eighth pair, in order to divide it, than the horse was thrown into the most extraordinary agitations, and no sooner was the nerve cut, than opening his mouth very wide, dilating his nostrils, extending his neck, exerting all the powers of inspiration, the animal breathed very laboriously through his mouth and nostrils, and uttered a horrible plaintive sound, like a brokenwinded horse, but much louder and more frightful. At the same time he made violent and vain attempts to vomit. His lips, tongue, and inside of his mouth acquired a red violet, and then a livid color.

He soon rose, but already weakened, and agitated with violent twitchings, having no certain gait, he lay down, stretched himself, rolled several times on the ground, and at length expired at the end of an hour and a half, in the most dreadful agonies, such as no pen can describe. On opening his body we found that the eighth pair of nerves had been completely divided, and that one of the great sympathetics had been slightly injured.

After being convinced, by repeating this experiment many times, that it was always attended with the same results, some slighter shades of difference excepted, relative to the intensity and duration of the symptoms, which depended sometimes on the strength of the animal, at others on the more or less complete division of the nerves of the eighth pair, and on the lesion of the great sympathetics, we inquired into the immediate cause of these dreadful phenomena. We supposed

that it might depend on the interruption of the hæmatosis in the lungs. In order to decide this question, we threw down a stallion of a dirty black color, aged fifteen or sixteen years, having the glanders, and being spavined in one leg. We laid bare successively the two nerves of the eighth pair, and the facial artery on one side; we then opened the artery, and after being satisfied, that the blood which spirted from it was of a vermilion color, we divided nearly at the same time, the two nerves of the eighth pair. Immediately we observed the same symptoms as we have mentioned above. The blood which now flowed from the opened artery, appeared black, and not red as it was before. In a short time the color acquired such intensity, that it was difficult to conceive how life could be maintained by blood, which so strikingly resembled venous blood. After having verified so remarkable a change, by the repeated examination of the blood furnished by the punctured artery, and by the comparison of several portions of this blood, and that of a sound horse, we were desirous of examining the state of the blood contained in the veins, and to our surprise we found it blacker than that in the arteries.

We have since repeated this experiment many times, and have always observed the same effects whenever the experiment has been exactly repeated. Without entering into a detail of each particular history, we shall now present the general result of the experiments we have made.

The horses in whom only one nerve of the eighth pair has been divided, experienced only a temporary inconvenience, their blood scarcely changes its color, and they soon get well.

Those in whom the nerve of the eighth pair has been entirely divided on one side, and to the extent of one half or two thirds on the other, at first labour under all the symptoms which follow the complete division of the two nerves, but these symptoms abate at the end of some hours; and if the animals are not worried, or made to run, they recover, and it is astonishing to see that the sixth, or even a smaller part of the nerves of the eighth pair is sufficient to maintain respiration; but whenever we force these horses into a gallop for a few minutes only, all the symptoms arising from the division of the nerves immediately occur, and sometimes terminate in

the death of the animal submitted to the experiment. We more particularly observed this in a horse in whom we had not left more than the seventh part of the eighth pair of nerves; a month after the experiment he appeared in good health, but when we made him run, he had hardly gone two hundred meters, than he began to blow, breathing through his mouth and nostrils, he lay down, rolled on the ground; his body was covered with sweat, his blood became black, and it was not till the end of half an hour, that these symptoms disappeared. And since then they have been renewed whenever he has been made to run.

The simultaneous division of the two nerves in the horse occasions the most alarming symptoms, and proves mortal in a space of time, never less than half an hour, and never exceeding ten hours.

The most usual phenomena of this latter division, are a violent agitation of all the limbs; efforts to vomit, always ineffectual in the horse; the opening of the mouth; the dilatation of the nostrils; a very loud plaintive sound, expressive of great pain and anguish; the black color of the arterial blood, that of the veins still darker.

In making these experiments, we did not confine ourselves to horses; we have repeated them on dogs; the general results they presented, are as follows: It will not be improper to remark, that in these animals it is extremely difficult to separate the great sympathetic nerve from the eighth pair, because the latter forms a groove, from which it must be disengaged, if we wish to avoid dividing it with the nerves of the eighth pair.

When we have succeeded in separating these nerves, and have divided that of the eighth pair on one side, the animal seems scarcely to suffer any effects from the experiment. But if we divide this nerve on both sides at once, the dog vomits, loses his voice, he opens his mouth very wide, the linings of this cavity assume a violet color; he becomes weak, lies down, crawls, or rather rolls on the ground, as if his strength were exhausted. The respiratory motions continue, excited however, by an illusive sensation; he extends his neck and muzzle, as if to catch the air. The color of his mouth becomes more and more livid, the blood in the arteries turns

black, that in the veins looks as if it had been charred. At length, faint and exhausted, he dies at the end of one, two, or three days at farthest.

From the preceding observations, it is evident, that the division of the nerves of the eighth pair, produces the same effects in dogs as in horses; it must be acknowledged that these effects are not so great in dogs, which may depend on their having less occasion to breathe than horses, or on their lungs receiving more nerves from the great sympathetic.

The constant result of these experiments is that the simultaneous division of both nerves of the eighth pair, produces death after some hours in particular animals, and after some days only in others, and that it prevents the hæmatosis in the lungs.

In order to establish the latter consequence, it remained to determine, whether there exist no other causes of death, and of the phenomena which accompany it, than the impaired state of respiration.

It did not seem probable that the pain and wounds occasioned by the division of the nerves of the eighth pair, could produce the phenomena we have described. In fact, the wound and pain resulting from the division of one of the nerves were so trifling that it was difficult to conceive how the division of the two nerves could produce effects so widely different.

However, to remove all possible doubt, and to subject the result of the preceding experiments to a decisive proof, we resolved to make compression on the eighth pair of nerves, strong enough to suspend their action, but not to destroy their organization. It is well known that the compression of the nerves produces the same effect as their entire division, with this difference, that they recover the power of acting when they have been only compressed, but that they irrecoverably lose it when they have been divided.

It is evident that if the phenomena which we have observed depend solely on the interruption of the action of the eighth pair of nerves on the lungs, that they will take place on compressing these nerves, and again disappear on the power of acting being restored to these parts.

We chose for this decisive experiment, a middle sized dog, and after laying bare the carotid artery, and satisfying ourselves that the arterial blood was of a vermilion color, we passed a ligature round the nerves of the eighth pair, and then made the requisite degree of pressure *proposed.* It had scarce been made, when retchings and violent fits of vomiting came on; the lips, tongue, and the inside of the mouth acquired a violet color, the arterial blood also became in a short time of a deep black color; yet there had been no interruption in the breathing. At the end, however, of some minutes, the animal weakened and gasping for breath ceased to move the chest. He seemed even for some minutes to be completely deprived of life, but on removing the compression from the nerves on the first signs of this apparent death, we soon observed some motions of inspiration and expiration, at first feeble and irregular, but which acquired force and regularity: and when perfectly reestablished, the livid and violet color of the eyes, lips, tongue, and inside of the mouth disappeared by degrees. From that time, the blood which was allowed to escape from the artery insensibly lost its black color, and in a short time became vermilion. By compression alternately made and suspended with nice attention, we could cause the same dog to pass several times from life to apparent death. These experiments, when carefully conducted, are attended with so little danger, that many animals submitted to them have perfectly recovered; and one dog on whom they were often repeated, we have kept for some time. The effect of this compression may be compared to the asphyxia produced by a non-respirable, but not deleterious gas, which interrupts respiration for a time; but occasioning no serious detriment to life, does not prevent respiration from being again restored and perfectly established.

Before we close what we have to say respecting the compression of the eighth pair of nerves, we will remark that its effects are always more immediate and dangerous than those from the division of the nerves, and we have had occasion to make the same observation on other nerves.

However conclusive the experiment we have related must appear, yet as it was performed on a part of the nerve of the

eighth pair in the neck, above that point whence are furnished very large branches to other organs besides the lungs, doubts might be entertained whether the phenomena observed were simply the result of the injury done to the life of the lungs, or whether they were not owing to the disturbance manifested at the same time in all the organs to which this nerve is distributed from below this point.

To remove all doubts it became necessary to divide separately the branches of the eighth pair sent to the lungs, and to allow the rest of the nerve and its distributions to remain; or if this were impossible, to divide successively all the branches sent to the other organs, and to allow the trunk and the branches sent to the lungs to remain untouched.

We adopted the latter as being the only one which could be employed, and as being as completely in point as the former; for it is evident that if, by successively dividing all the principal branches of the eighth pair of nerves, those going to the lungs excepted, none of the above described phenomena should be produced, there can be no hesitation in considering the cessation of the action of the eighth pair of nerves on respiration as their true and only cause.

We began by dividing the superior laryngeal nerves in a dog; the only consequence was a weakness of voice attended with disagreeable hoarseness, which subsided after a time. We should have been desirous of dividing the filaments going to the heart with the view of determining the effect on the motions of this organ, and of their consequent derangement on life; but it is well known that it is almost impossible to perform this experiment completely.

We then divided the two superior laryngeal, and the inferior laryngeal recurrent nerves in another dog; the voice was completely destroyed, as has been observed by many physiologists since the time of Galen. None of the symptoms of asphyxia produced by the intire division of the eighth pair of nerves occurred, either during the operation, or for a length of time which the animals lived, who had been subjected to experiments fraught with so little danger.

It now remained that we should divide the nerves arising below the pulmonary plexus with the view of closing this kind

of analysis, and of assigning to each branch of the eighth pair, the share it had in the phenomena exhibited by our experiments. This very difficult division could only be performed by opening the left side of the chest in a living dog, and by searching with the fingers for the stomachic cord twisted upon the œsophagus, the animal still breathing with the right side. Having discovered these nerves it was easy to divide them with a pair of scissars; at that instant the most dreadful retchings, and violent vomitings came on, and it often happened that we could neither restrain them, nor retain the lungs within the chest, and the animals died in our hands. We were, however, fortunate enough to preserve the life of many of them for some days, by closing the wound in the chest with a suture. Yet in this case we observed no signs of asphyxia, nor of change in the color of the arterial blood to black.

From these experiments it appears that the influence of the branches of the eighth pair of nerves, is confined to the parts to which they are respectively distributed; that the division of the superior laryngeal nerves, inferior laryngeal, and the stomachic cord produce only hoarseness, loss of voice, nausea, and vomiting, and that we must refer the production of the symptoms of asphyxia to the pulmonary nerves alone.

This being established, it remains that we should obviate some few objections, so as to give the greatest possible weight to the conclusions presented in this memoir.

May not the asphyxia which we have just announced depend on the disorder which usually arises in the motions of respiration, after the division of the eighth pair of nerves? But this disorder, however remarkable it may be, is no more than what sometimes occurs on other occasions which, nevertheless, are not followed by asphyxia or death. Besides, this disorder in the motions of respiration is not inseparable from our experiments, and we have more than once seen the hæmatosis when these motions had undergone no sensible alteration.

The nerves are essential to the nutrition of the organs, and to the exercise of their functions: whence it results that by destroying the integrity of those nerves, the nutrition and functions of these organs must be at the same time affected.

But is it by solely suspending the nutrition of the lungs that the asphyxia is produced? That is scarcely probable; for nutrition is, in its very nature, a slow operation, and cannot be stopped in an instant, and when it ceases, does not produce instantaneous effects. Nevertheless, convinced that we ought always to prefer experiment to reasoning, we divided one nerve of the eighth pair in one dog; and in another, we intirely cut across one nerve of the eighth pair, and the other to one half; we performed the same experiments on a horse, and we allowed these animals to live for more than a month, yet we never discovered, on opening their bodies, any marks of atrophy, wasting, or alteration in their lungs.

This fact, in conjunction with some others, particularly with the observation from Scarpa, that the pulmonary filaments from the eighth pair, are distributed almost exclusively to the bronchiæ, and their internal membrane, would seem to indicate that their functions are especially connected with respiration.

There is one other objection, which appears much stronger than any of the rest, and which must not be passed unnoticed. If respiration is under the influence of the eighth pair of nerves, as our experiments seem to demonstrate, how happens it that death is much longer before it takes place in this kind of asphyxia, than in those produced by the want of respirable air? In the first place, it may be remarked, that in a divided nerve, that part which is separated from the brain still retains the power of determining the motions and actions. Again, the filaments derived from the great sympathetic through the medium of the pulmonary plexus, may preserve respiration for some time after the destruction of the eighth pair. One circumstance which we have more than once observed, in our experiments, gives great weight to this last opinion; it is that horses, in whom the great sympathetic was divided at the same time with the eighth pair, have always perished much sooner, than those in whom the latter were alone divided. Hence it is probable that the filaments which the great sympathetic sends to the lungs, may preserve in them a power capable of retarding for some time the change of the blood to a black color. And, observations made on men having defects in the organization of the heart, which permit the black blood

to mix and to circulate with the red, show that an animal may live for a long time with a mixture of these two fluids, in very different proportions. They likewise show that these persons remain habitually in a state of muscular debility and oppression of strength, very analogous to what we have observed in brutes.

Though these explanations should not sufficiently account for some of the circumstances in our experiments, the following conclusions will not be the less correct.

1. The simultaneous division of both nerves of the eighth pair, is always mortal.

2. This division occasions an asphyxia, which lasts for a longer or shorter time according to the kind of animal submitted to this experiment.

3. This asphyxia is characterized by the same symptoms with the affection which occurs after the division of the nerves, and especially by the black coaly color of the blood both in the arteries and veins.

4. Whilst this asphyxia lasts, the air continues to enter the lungs, and the blood to circulate through them, which affords a convincing proof that this disorder does not arise from a suspension of the motions of the chest, or of the heart, but from the suspension of the action of the lungs.

5. It is possible by the mere compression of the eighth pair of nerves, regulated so as to be alternately continued or suspended for a short time, to produce or remove this asphyxia, and even to render it fatal. Hence when it follows the division or compression of the before mentioned nerves, it can be attributed to no other cause than the lesion of these nerves.

6. As the lesion of the eighth pair of nerves interrupts respiration, this function in the healthy state is under the influence of the nerves distributed to the lungs; under that of the brain whence the nerves are derived; and consequently of life, of which the action of the nerves and the brain, are only a condition.

There is then a primary cause of respiration, as well as of the other functions, dependent on life, which regulates its action, and determines the law and play of chemical affinities.

We must begin with this primary cause in our inquiries respecting respiration, and all the other functions, if we would judge correctly of the physical, mechanical, and chemical phenomena, and their various changes.

Case in which the operation of tying the Vena Saphena, for the cure of an old Ulcer in the Leg, terminated fatally.

By HENRY OLDKNOW, Esq. Surgeon, Nottingham.

From the Edinburgh Medical and Surgical Journal, for 1809.

I BEG leave to offer, through the medium of your Journal, the following unfortunate result, from a case in which the saphena vein was tied, for a cure of a long standing ulcer of the lower extremity; and I make this communication to the public, because a correspondent in your last October number has spoken of the success of the operation, in a case which has lately occurred to him, and wherein he wishes to know the experience of other practitioners. At the same time, allow me to express a wish, that the report of unsuccessful cases were more frequently made, as no doubt they do sometimes occur; for I do think they would operate as much to the advantage of the healing art, and of our professional brethren, as the relation of such very extraordinary cases of successful practice, which we now and then meet with in some periodical publications. A young man (about twenty-three years of age) of plethoric habit, had been troubled, for the last two or three years, with painful ulcers about the inner ancle of the right leg, which repeatedly healed, and broke out again, so as to prevent, in a great measure, his attendance to business; he, therefore, became desirous, on my representation, of having the saphena vein tied, it being varicose to within a hand's breadth of the knee. The operation was performed in the following manner. An incision three quarters of an inch long, and about one inch and an half above the distention, was made through the skin immediately over the vein, and in the direction of its course. The cellular substance was then carefully divided, the vein lying deeper than usual, until its upper surface was completely exposed. Its accompanying nerve was cautiously avoided, be-

ing distinctly seen about four lines distant from it, and nearer to the spine of the tibia. A probe, armed with a double ligature, was passed under the vein, taking care to include nothing with it, it being cleanly dissected from the surrounding cellular membrane, upwards and downwards, as far as the extent of the first incision, and then tied. The portion of vein between the two ligatures being afterwards cut out, the lips of the wound were brought together by a suture and adhesive plaster, with a view of healing it by the first intention. My reason for using a suture, was to prevent the edges of the wound from curling too much inwards, (a circumstance I have seen often occur, when the sticking plaster alone is used,) thereby preventing its healing, or be the means of forming an irregular cicatrix. The patient was then put to bed, and directed to use a cold embrocation. On the second day he took some opening mixture. Third day, the wound was dressed, and appeared wholly united, except where the ligatures came out. The suture was cut out, and fresh adhesive plaster applied. On this day he complained of pain in the lower part of the limb, that is, from the lowermost ligature, along the vein, down the foot; to use his own expression, as if the blood in the vein was endeavouring to overcome the obstruction caused by the ligature. This sensation was, however, entirely removed, by applying a bandage moderately tight, from the toes, upwards. Fifth day, there appeared a little erythematous blush about the wound; he had a trifling epistaxis; and I thought proper to take from him sixteen ounces of blood, which was not inflamed; the purging mixture was repeated. Sixth day, complained of a little pain on the inner side of the knee, in the course of the vein; but there was no external inflammation at that part; the lips of the wound began to separate. In the evening, he was suddenly seized with a violent rigor, succeeded by a hot fit, and symptoms of great vascular action, and some tendency to delirium. Pulse 130, hard and full; therefore, sixteen ounces of blood were taken from the arm; it gave instantaneous relief, and was followed by the sweating stage, which continued several hours, and was succeeded by a state of quietude, soon, however, interrupted by a recurrence of the same train of violent symptoms, at first about once in twenty-four hours, but

gradually increasing in frequency, and diminishing in strength, until nature became exhausted, death closing the scene twenty-two days from the operation. For the first four or five days after the rigor, the wound discharged pretty freely, and by making strong pressure about the knee, a little matter was forced from it. The inflammation crept gradually up the vein, which was evident from its peculiar cordlike feel, and from giving pain on pressure, until it reached the groin, the inferior part getting well as the superior became bad, so that the wound was nearly healed before death, the ligatures having separated about the fourteenth day. There was no tumefaction of the cellular membrane, no enlargement of the glands in the groin, no superficial inflammation on the thigh. There was, it is true, a slight redness of the skin when the poultice was removed, (for the thigh, along the course of the vein was covered with cold poultice,) which entirely vanished on exposure to the air. The medical treatment was strictly antiphlogistic; the patient was repeatedly bled, and with apparent relief every time, the blood being extremely sizy ever after the first rigor. Two days, however, previous to his death, the vital principle was so exhausted as to need the use of cordials.

This is the result of an operation, which, I believe, is generally considered as a very trifling one, and not endangering the life of the patient: judge, then, my mortification at this unexpected termination. On inquiry, however, I find another fatal case has occurred in this neighbourhood, differing in its symptoms from the one I have related. Large collections of matter formed in the cellular membrane, along the course of the vein, as far as the groin, and the patient died two months after the operation, the fever assuming the form of an intermittent. In this case, the incision was made transversely, and the vein was tied by a single ligature, as mentioned by your correspondent. Many are the cases, where much inflammation has followed the operation, and no doubt many persons undergo the operation without any such occurrences; but even then, it is a question, whether it be attended with that permanent advantage we are led to expect from it. Ought we, therefore, in any such cases, to run the risk of the danger incurred by the operation? Mr. Home, in his book on ulcers, mentions

symptoms of inflammation having taken place in a few instances; but he is more inclined to attribute them to the unhealthiness of large hospitals, than to any immediate effect of the operation; and in my opinion, his book is calculated to impress the minds of medical men, with too little importance in regard to the operation, and its consequences. In the above case, you will perceive the inflammation was confined to the vein itself. Are we, then, with Mr. Hunter, to attribute the death of the patient to the inflammation extending to the cavities of the heart, or to an inflammatory exhalation from the inner surface of the vein, which, being carried into the circulation, acts as a constant source of irritation to the heart and brain, and thus produces the disease? I think, at least, such an opinion is not irrational, knowing as we do, the deleterious effects which all the animal secretions, when injected into the veins, have upon the system.

Nottingham, February 11, 1809.

An account of a peculiar Disease of the Heart.

BY DAVID DUNDAS, ESQ.
Sergeant surgeon to his majesty.

From the Medico-Chirurgical Transactions, Vol. I.

THERE is a disease of the heart, which I apprehend is not very uncommon, no less than nine cases of it having, in the course of thirty-six years, fallen under my care. I have also heard of several other cases, and yet I do not believe any account of it is to be found in any medical author.

The patient complains of great anxiety and oppression at the præcordia; has generally a short cough, and a difficulty of breathing, which is so much increased by motion or by any exertion, as to occasion an apprehension that a very little additional motion would extinguish life. There is also frequently an acute pain in the region of the heart, but not always.

The difficulty of breathing is also aggravated by taking even a small quantity of food.

He prefers lying on the back, complains of great palpitation of the heart, and violent pulsation of the carotid arteries, attended with noise in the ears and giddiness of the head.

In some cases I have found the action of the heart so very strong as to be distinctly heard, and to agitate the bed the patient is in so violently, that the pulse of the patient could be counted by looking at the motion of the curtains of the bed.

The pulse is always very quick, and is often irregular: in some cases it has been weak, but more commonly very hard.

Towards the conclusion of the disease symptoms of water in the chest take place, the legs become œdematous, and frequently a considerable collection of water is accumulated in the abdomen.

In all the cases which I have seen, this disease has succeeded one or more attacks of rheumatic fever. In one case the affection of the heart appeared at the commencement of the rheumatic fever, and its action was so rapid, that the pulse could not be counted for many days; much difficulty of breathing and oppression attended with a sense of great debility took place, and the inflammation, pain, and swelling of the extremities, after having shifted from one joint to another for many weeks, subsided; but the affection of the heart continued, generally attended with great pain, producing in the progress of the disease, and towards its close, a considerable disposition to dropsy, under which the patient lingered for ten months.

All those I have seen afflicted with this disease were young persons; only two were above twenty-two years of age. Six of them were males, and three females.

Most of them struggled with the disease for many months. Seven of the nine have died. One I am attending at present, and I think cannot recover; and one is apparently well, having survived the attack four years. He has had no rheumatic affection for two years and a half, but the action of the heart is still very violent and easily increased by exercise. His recovery is attributed to a very strict adherence for a long time to a vegetable and milk diet, and great attention to avoid any considerable exertion.

Of the seven cases which proved fatal, six have been opened, and all of them agree in the general appearance of the heart. In all the heart was uniformly found to be enlarged, in some, the enlargement was much more considerable than in others. In one case water was found in the pericardium, in

all the others the pericardium adhered to the heart. The left ventricle, in all the cases, was most enlarged in size, but not in thickness, and in most of them the heart was found of an unusually pale color, and very soft and tender in its texture.

In one case, the examination of which was made by Mr. Chilver, in the presence of Sir Walter Farquhar, Dr. Baillie, Dr. Saunders, Dr. Gillan, and myself, Dr. Baillie thus describes the appearance of the heart. "The pericardium was found closely adhering in every part to the surface of the heart. The heart itself had increased wonderfully in size; it was at least three times the size of a healthy heart. The muscular structure was, however, not increased in thickness beyond what it commonly is, so that its powers of action were not augmented proportionably to its bulk. As the quantity of blood in this heart was much larger than is natural, (for instead of a few ounces it contained almost a quart of blood) its powers of propelling this blood to the different parts of the body must have been much diminished below the common standard."

Mr. Thomas, of Leicester-square, gives the following account of the examination of the body of a young gentleman (who died of this disease,) at which I was prevented from being present. "The heart was somewhat larger than common, and the enlargement was confined principally to the left side. It was of a pale color, extremely soft and tender in its texture, and its cavities were filled with coagulated blood, having but a slight cohesion of its component parts. Nothing remarkable presented itself in the right auricle and ventricle; but upon opening the left ventricle was found an irregular excrescence of the nature of Polypus, attached to, and nearly occupying the whole of one of the valvulæ mitrales."

I have an account of a case so far back as the year 1770, in which all the appearances correspond almost exactly with those in the case described by Dr. Baillie. The heart is mentioned to have been three times its usual size; the pericardium adhered to the left ventricle, which was inflamed, and was thinner than the right. Where the pericardium did not adhere, a small quantity of water was found in it.

I examined lately, the body of a young lady who died of this disease, in presence of Mr. Nixon and Mr. Jones, sur-

geons, at Hampton, and found the heart of an unusual size, and the pericardium adhering closely in every part to it. The substance of the heart was of a pale color, and the texture of it was so tender, that the finger could with great ease be pushed through it. It was chiefly enlarged on the left side, but its muscular structure was not increased in thickness. The valvulæ mitrales were edged with a substance of a spongy appearance, perhaps coagulable lymph.

I have an account of an incipient attack of this disease, judiciously and successfully treated by Dr. Pemberton. His account of the case is so very distinct, and in many respects corresponds so exactly with the disease I have described, that I will take the liberty to give it in the doctor's own words.

"Mr. —— had been in his youth, and indeed even to the time he was taken ill, (aged 36) subject to the acute rheumatism. He had been particularly troubled with this complaint during the whole of the winter immediately preceding the affection of the heart, which took place in March. He was seized with a considerable pain at the heart, and a difficulty of respiration, great palpitation and great anxiety. He conceived that the smallest motion of the body would have instantly destroyed him, and this dread seemed to have totally bereft him of the power of utterance. He sat for six or eight hours without being able to articulate a sound, though he was conscious of what was going on about him. He had frequent rigors, and almost constant profuse sweats. Cordials of various sorts were given him, till he appeared in a slight degree more composed, when a small quantity of blood was taken from the arm. This did not appear buffy. In about three days he ventured to move from the chair where he had remained from the first attack, but upon the slightest exertion the palpitation and anxiety were renewed. When he remained perfectly at rest the palpitation was hardly observable.

"In about a fortnight all his apprehensions of death seemed removed; but still on the most trifling exertion he was reminded of his former sufferings, so that for a month he scarcely moved at all.

"By placing the hand upon the heart, there appeared a very

great throbbing, which beat up the carotids so much as to occasion a most unpleasant noise in the head.

"On considering the circumstances of this case, I was inclined to suspect that a small portion of the surface of the heart had been affected with inflammation, and that in consequence, a partial adhesion had taken place between it and the pericardium. The plan recommended, was a seton in the region of the heart, and a pill composed of three grains of the succus spissatus cicutæ, and half a grain of the powder of digitalis, three times a day, abstinence from all fermented liquors, and a moderate quantity of animal food.

"The irregular action of the heart continued at intervals for eight months, when it gradually lessened, so that in about a year there remained no symptoms of the former complaint, and Mr. —— is now (at the distance of four years) equal to undergo any exertion or fatigue without producing any irregularity of the heart's action."

The knowledge that this disease is always the consequence of, or is connected with, rheumatic affection, points out the necessity of attending to the translation of rheumatism to the chest; and shows the importance of employing very vigorous measures to remove it as soon as possible; but whenever it has made any considerable progress, I fear it will baffle every effort.

November 20th, 1806.

Since writing the above I have been favoured by Dr. Marcet with an account of two cases of translation of rheumatism from the extremities to the chest, producing several of the symptoms I have noticed; but not in so marked a degree as in the cases I have seen. Both these patients died, and were opened, and in both of them the heart was found to be much enlarged. I also last year attended a person aged 29, who had twice had the acute rheumatism; but having been wet through last September, was seized with shiverings, succeeded by a pain across the chest, great difficulty of breathing, which was increased by the slightest motion, a very strong palpitation of the heart, and violent action of the carotid arteries, accompanied with a sense

of great debility, and an apprehension she was just going to expire.

She had been in this state for a fortnight, before I saw her. She had not been able to go to bed for many nights; her legs and thighs were much swollen, and her pulse, which was very weak, was so quick, that it could not be counted. She had no cough. She submitted to have a blister applied to the region of the heart, but would not allow an issue to be made. By the use of the digitalis her pulse became less frequent; but as it disordered her head and stomach she was obliged to relinquish it. The action of the heart now was tremendous; she daily became weaker, although her appetite continued good to the last, and she died at the end of two months.

She was opened in the presence of Mr. Taylor, of Kingston. The lungs on the left side had very little space to act in, the heart, which was enlarged to a most extraordinary size, occupying the greater part of the left side of the thorax. The lungs were found on both sides, to have strong adhesions to the pleura; and above a pint of water was found in the cavity of the thorax. A considerable quantity of water was contained in the abdomen. All the abdominal viscera were sound, except the spleen, which was of a much paler color and softer texture than usual.

The Case of a Man who died in consequence of the Bite of a Rattle Snake, with an Account of the Effects produced by the Poison.

By EVERHARD HOME, Esq. F. R. S.

WITH PRELIMINARY OBSERVATIONS.

From the London Medical and Physical Journal, for 1810.

THE public sensation which was occasioned by a man having been bitten by a *rattle snake*, kept at a menagerie in Piccadilly, was extended as far as a knowledge of the fact had spread. Curiosity, with respect to the symptoms and fate of the wounded man, was highly excited; but many months elapsed before this curiosity was satisfied. A minute detail of the case has now been published, and we embrace this opportunity of laying it before our readers.

The *genus* to which the serpent that wounded the subject of the following case, belongs, is peculiar to America, and has the expressive appellation, CROTALUS, given to it by Linnæus. It contains five species, according to the *Systema Naturæ Linn.*

1 CROTALUS *miliarus.*
2 ——— *horridus.*
3 ——— *dryinas.*
4 ——— *durissus.*
5 ——— *mutus.*

To which the Count La Capede has added a sixth, the Fisher, *(le Piscivoire)* described by Catesby, (Natural History of Carolina,) and by him only, and two varieties, Gronian durissus. (*Crotalophorus tertius.* Gron. Mus. 11. 70. n. 45,) and the fasciated durissus. (*Crotalus faciatus. Vosmaer.* monagr. anno 1767.) The whole of the species of this genus are furnished with poisonous fangs, but have the character of seldom biting,* unless irritated, or for the purpose of securing their prey.

The species by which this person was bitten, is the *crotalus horridus*, the most terrific and formidable of the genus. Many names have been given to it, either expressive of its mechanism or its qualities; it is the *caudisona terrifica* of Laurentius; the *vipera caudisona*, and *anguis crotalophorus* of our countryman, Ray; the *regina serpentum* of Hernandez; the *boiquira* of Piso, and the Encyclop. Method. From the quickness of its motions, the Mexicans call it *ecacoatle*,† for it darts on its prey, wounds, and retires with the swiftness of the wind.

The *crotalus horridus* is found along the American continent, from the Streights of Magellan, to Lake Champlain, in Canada. For a long time after the discovery of the new world, this *regina serpentum*, reigned without control over its vast wilds and impassable forests. Few, possibly none, of the native animals preyed upon it; and it was secured from the destroying hand of man, by superstitious terrors that influenced, un-

* The pacific disposition of the rattle snake is asserted by Batram.

† This word, expressive of velocity, is sometimes written *Hoatcoatl*. Savage nations often employ a highly figurative language. The Mexicans denominate the rattle snake *Tuetlacacauqui*, the king of snakes.

accountably indeed, the ancient Americans. As human dominion extends, the lower orders of nature submit, or are exterminated. Thus, the arts and labour of civilized life, as they clear and cultivate the soil of America, daily diminish the numbers of the *crotalus;* and contract the space in which its ravages are exercised. It is probable the time is not far distant, when it may become a rare animal even in America.*

The habits and powers of the rattle snake, (*crotalus horridus*, for it is this species of the genus, upon which observation has been most exercised,) have been examined with anxious precision; and much has been written to elucidate them; but on some of its striking properties, doubt still remains. There are four particulars, which have most employed attention: its poison; its power of fascination; its rattle; and its abdominal fœtor.

The general terror excited by the rattle snake, is described with wonderful force and picturesque effect, by the elegant Buffon. " A traveller," says he, " wandering in the burning deserts of Africa, who hears the roaring of a famished tiger, furious for prey, and who has no means either of escape or defence, feels not greater dread than when passing through the vast forests of the warm and humid regions of the new world, he scents the abdominal fœtor of the *boiquira*, hears the terrifying noise of its portentous rattle, and observes it ready to spring upon him from amid the verdant foliage and brilliant flowers of those delightful solitudes." Again, he says, " During storms of thunder it is most to be dreaded. One even shudders in idea, at the terrible situation and mortal agony of a person, who, escaping in the midst of almost total darkness from the terror of a tornado, seeks shelter under the edge of a rock, and perceives the glaring eyes of a *boiquira*, through the gloom, sometimes illuminated by the lightning, while he hears the rattle of its tail, and the horrid hissings of its venomous mouth. Language has not power to express the deadly swiftness with which the poison of the *boiquira* sometimes acts. In

* It is a remarkable circumstance, that the European hog should be the most formidable instrument for the destruction of this serpent. The moment a hog scents a rattle snake, he erects his bristles, rushes upon it with avidity, and seizes it with extraordinary address.

a minute, half a minute, in an instant, the bitten animal has expired."* In this country, a rattle snake bit dogs that died in a few minutes. These experiments were made at the college of physicians, about 1728. Mr. Ranby, the surgeon, examined the poisonous apparatus, and gave a description of it in the Philosophical Transactions, vol. xxxv. p. 377. Dr. Edward Tyson had, some years before this, made a minute dissection of another that had been sent to this country, about 1690; and which probably was the first brought hither alive. (Philosophical Transactions, vol. xiii. p. 25.) Of the chemical qualities of the venom not much is known. It is described, however, as a greenish fluid, and that it tinges linen of a green color, which becomes brighter by washing. It is believed, that the poison sometimes accumulates in its receptacle, to a degree that becomes painful to the animal, and that then it attacks every thing that comes in its way. (Hist. Gen. de Voyage.)

Of the fascinating power of the *crotalus horridus* much has been related, but accompanied with circumstances so extravagant, as to gain but little credence with the reflecting part of mankind. An ingenious and learned naturalist of America, (Dr. Barton) has written a treatise expressly on the subject, in which he adduces many observations to prove the nonexistence of this power. The fascinating property has been supposed by some to be connected with the stupifying quality in the breath of the *boiquira;* by others, to be effected by the dazzling splendor of its eye. *Kalm* offers a solution of some of the instances. He conjectures, that "in most of those instances where a squirrel or a bird has been seen to come, apparently of its own accord, from the top of a tree into the mouth of the *rattle snake*, that it had been previously bitten by the serpent; and having escaped into the tree, where it expressed, by its cries and agitation, the violent action of the venom; that as its strength diminished, it gradually descended from branch to branch, till at length it became exhausted, and fell to the ground, near the serpent, which remained steadfastly following all its motions with its eyes, and ready to seize it whenever it came within reach."

* In the case related by Mr. Home, it may be observed, though the patient lived some weeks, the sensorium was immediately affected.

The mechanism of the rattle has been minutely described; and its structure is doubtless a subject worthy of investigation; but why the animal should have an appendage that must necessarily give notice of its hostile intention, is a question not easily solved. It has been understood, that this serpent could not move without its rattle giving notice of its being in action. This did not, however, appear to be precisely the fact, in the two rattle snakes in Frazer's nursery, Chelsea, in the summer of 1809, and by one of which, the man, whose case is here related, was bitten. From observing the habits of those, we can say that when irritated, they formed themselves into several coils, the head erect in the centre, and the tail, with the rattle at the circumference. In this position, the rattle was moved with a quick and tremulous motion, to be heard at thirty yards distance. This motion of the rattle, which is effected with extreme velocity, appears to mark the design to strike when the object comes within the proper distance; and certainly manifests the snake then to be in a hostile position. If in the common movements this apparatus gives any audible sound, it will have a different character from that which indicates anger. The stroke of the snake, and the cessation of the action of the rattle, occurred at the same instant.

The fetid odor that is emitted from this serpent, if it sometimes deprives small animals of the power to escape; at others, serves as a warning of its approach; and horses, cattle, and other animals thus escape from its bite. This disgusting scent has been described as a property in the breath, and exhaled from the lungs; it is probable, however, that it is afforded by some glands described by Tyson, and placed near the anus: or is compounded of the fetor arising from the fluid secreted by these glands, and the halitus thrown out by the lungs and general surface.

Many remedies for the bite of the rattle snake have been recommended, particularly the *polygala senega;* and several instances are recorded of their success. In the case before us, those employed were given on general indications, rather than with a view to specific properties.

When we request the attention of our readers and correspondents to a subject of such interest and importance as the

animal poisons, and especially those of the order of *serpentes*, we expect that the natural history and deleterious effects of those poisons will be elucidated in a proportion agreeing with the investigation we hope to elicit.

The Case of a Man who was bitten by a Rattle Snake, &c. &c.

(Philosophical Transactions, for 1810. Part I.)

THOMAS SOPER, twenty-six years of age, of a spare habit, on the 17th of October, 1809, went into the room in which two healthy rattle snakes, brought from America, in the preceding summer, were exhibited. He teased one of them with the end of a foot rule, but could not induce the snake to bite it, and, on the rule dropping out of his hand, he opened the door of the cage to take it out; the snake immediately darted at the hand, and bit it, twice in succession, making two wounds on the back part of the first phalanx of the thumb; and two on the side of the second joint of the fore finger. The snake is between four and five feet long, and when much irritated, bites the object twice, which I believe snakes do not usually do.

The bite took place at half past two o'clock. He went immediately to Mr. Hanbury, a chemist in the neighbourhood. There was at that time no swelling on the hand, and the man was so incoherent in his language and behaviour, that Mr. Hanbury considered him in a state of intoxication, and gave him a dose of jalap, to take off the effects of the liquor, and made some slight application to the bites. It appeared, on inquiry, that the man had been drinking, but that before he was bitten, there was nothing unusual in his behaviour. After leaving Mr. Hanbury's, the hand began to swell, which alarmed him, and he went to St. George's hospital. He arrived there at three o'clock. The wristband of his shirt had been unloosed, and the swelling had extended half way up the fore-arm, before his admission. The skin on the back of his hand was very tense, and the part very painful. At four o'clock, the swelling extended to the elbow, and at half past four, it had reached half way up the arm, and the pain had extended to the axilla. At this time, Mr. Brodie, who visited him in my absence, first saw him; he found the skin cold; the man's answers were incoherent: his pulse beat one hundred strokes in a minute,

and he complained of sickness. Forty drops of aqua ammoniæ puræ, and thirty drops of spiritus ætheris vitriolici, in an ounce of mistura camphorata, were given to him, but did not remain on his stomach. The wounds were bathed with the aqua ammoniæ puræ, and the arm and forearm had compresses wetted with camphorated spirits applied to them. At five o'clock, he took two drachms of spiritus ammoniæ compositus, and thirty drops of ether, in an ounce and an half of mistura camphorata, which remained on his stomach. At six o'clock, his pulse was stronger; at half past seven, his pulse was very feeble, and thirty drops of ether, and the same quantity of aqua ammoniæ puræ were given in water. At half past eight it was repeated. At nine o'clock he had the feeling of great depression; his skin was cold, his pulse weak, beating eighty strokes in a minute. The dose was increased to fifty drops of both medicines, and repeated. At a quarter past ten o'clock, the pain had become very violent in the arm; his pulse was stronger, but fits of faintness attacked him every fifteen minutes, in which the pulse was not perceptible, but in the interval his spirits were less depressed. In the course of the evening he had two stools. At half past eleven o'clock I first saw him. The hand, wrist, forearm, and arm were much swelled up to the top of the shoulder, and into the axilla. The arm was quite cold and no pulse could be felt in any part, not even in the axilla, the swelling preventing me from feeling the axillary artery with any degree of accuracy. The wounds made on the thumb were just perceptible; those on the finger were very distinct. His skin generally was unusually cold. I took some pains to diminish his alarm of danger, and found his mind perfectly collected: he said, he hoped he should recover. At one o'clock in the morning of the 18th, he talked indistinctly: his pulse beat one hundred in a minute; the attacks of faintness came on occasionally. The medicine was repeated every hour. At eight o'clock, on the morning of the 18th, his pulse beat one hundred and thirty-two strokes in a minute, and was very feeble. The swelling had not extended beyond the shoulder to the neck, but there was fulness down the side, and blood was extravasated under the skin as low as the loins, giving the back, on the right side, a mottled appearance. The whole arm and hand were cold, but painful when pressed; the

skin was very tense; on the inside of the arm below the axilla, and near the elbow, vesications had formed, and under each of the vesications there was a red spot in the cutis, of the size of a crown piece. The skin generally, over the body, had become warm. He was low and depressed; there was a tremulous motion of his lips, and the faintings recurred at nearly the same intervals as in the preceding evening. The last dose of medicine was rejected by vomiting, but some warm wine remained on his stomach. The arm was fomented. At twelve o'clock, in addition to the above symptoms, there was a starting of his limbs. He had attempted to take some broth, but his stomach did not retain it. The skin of the whole arm had a livid appearance, similar to what is met with in a dead body, when putrefaction has begun to take place, unlike any thing which I had ever seen in so large a portion of the living body. An obscure fluctuation was felt under the skin of the outside of the wrist, and forearm, which induced me to make a puncture with a lancet, but only a small portion of a serous fluid was discharged. My colleague, Dr. Nevinson, was present at this visit, and we agreed to continue the internal use of the volatile alkali, with the view of rousing the stomach to action, not considering it as having any specific power over the poison. At eleven o'clock in the evening, finding that his stomach did not always retain the medicines, nor even small quantities of brandy, which were given him, I directed the volatile alkali to be left off, and two grains of opium to be given, and repeated every four hours. At this time his pulse was scarcely perceptible at the wrist; the fainting fits were not less frequent. The vesications and red spots were increased in size.

October 19. At nine o'clock in the morning his pulse was scarcely perceptible: his extremities were cold; the vesications were larger, and the size of the arm was diminished. He was drowsy, probably from the effect of the opium. He had taken nothing but brandy during the night. At three o'clock in the afternoon he was more depressed: spoke only in whispers: the vesications were increased: the fainting fits less frequent. The arm was diminished in size; and he had sensation in it down to the fingers. At eleven o'clock at night, his pulse beat one hundred and thirty in a minute, and was low. The opium was

left off. A stool was procured by clyster. He was ordered to have a glass of camphorated mixture occasionally, and wine and brandy, as often as he could be induced to take them.

October 20. He had dozed at intervals during the night; his spirits were better, and his extremities warmer. At nine o'clock he took coffee for breakfast. He afterwards took some fish for dinner, but it did not remain on his stomach; he therefore took brandy and coffee at intervals, half an ounce at a time, as larger quantities did not remain on his stomach.

October 21. He had slept at intervals during the night, but was occasionally delirious: his pulse one hundred and twenty in a minute. Brandy and jelly were the only things that stayed on his stomach. The size of the arm was reduced; but the skin was extremely tender.

October 22. He had slept during the greater part of the night; his pulse beat ninety-eight in a minute; he took some veal for dinner, and brandy at intervals. In the evening, his pulse became full and strong: he was ordered wine instead of brandy. The right side of the back, down to the loins, was inflamed and painful, and had a very mottled appearance, from the extravasated blood under the skin.

October 23. His pulse continued full; and the arm was very painful, though reduced in size. The vesications had burst, and the exposed cutis was dressed with white ointment. Stools were procured by an opening medicine. He took some veal and porter for dinner; the wine was left off. In the evening, he had a saline draught, with antimonial wine.

October 24. There was no material change.

October 25. His pulse had increased in frequency; but in other respects he was nearly the same. His bowels were opened by medicine.

October 26. The arm was more swelled and inflamed.

October 27. The inflammation of the arm had increased: his tongue was furred, and his pulse was very frequent. He attempted to sit up; but the weight of the arm and the pain prevented him. The arm was bathed with spirits of wine and aqua ammoniæ acetatæ in equal quantities.

October 28. A slough had begun to separate from the inside of the arm below the axilla, and a purging had come on, for

which he was ordered chalk mixture and laudanum. In the night he had a rigor.

October 29. The purging had abated: his pulse beat one hundred in a minute, and was feeble. A large abscess had formed on the outside of the elbow, which was opened, and half a pint of redish brown matter was discharged, with sloughs of cellular membrane floating in it. The lower part of the arm became much smaller, but the upper part continued tense. A poultice was applied to the wound. The lower portion of the arm and the forearm were covered with circular strips of soap cerate. He was ordered to take the bark, and allowed wine and porter.

October 30. The redness and swelling of the upper part of the arm had subsided: the pulse was one hundred in a minute. The purging had returned. The bark was left off: the chalk mixture and laudanum were given, and an opiate clyster administered.

October 31. The pulse beat one hundred in a minute; the discharge from the abscess had diminished; the purging continued, and at night he had a rigor.

November 1. The pulse was one hundred and twenty. His voice was feeble; he had no appetite, was delirious at intervals. Ulceration had taken place on the opening of the abscess, so that it was much increased in size. He drank two pints of porter in the course of the day.

November 2. His pulse was very weak; his countenance was depressed; his tongue brown; the ulceration had spread to the extent of two or three inches. Mortification had taken place in the skin nearer the axilla. His stomach rejected every thing but porter; in the night he was delirious.

November 3. The mortification had spread considerably: the purging continued: the forefinger, which had mortified, was removed at the second joint.

November 4. He died at half past four o'clock in the afternoon.

Sixteen hours after death, the body was examined by Mr. Brodie and myself, in the presence of Mr. Maynard, the house surgeon, and several of the pupils of the hospital.

With the exception of the right arm, which had been bitten,

the body had the natural appearance. The skin was clear and white, and the muscles contracted.

The wounds made by the fangs at the base of the thumb were healed, but the puncture made by the lancet at the back of the wrist was still open. That part of the back of the hand, which immediately surrounded the wounds made by the fangs, for the extent of one inch and an half in every direction, as also the whole of the palm, was in a natural state, except that there was a small quantity of extravasated blood in the cellular membrane. The orifice of the abscess was enlarged, so as to form a sore on the outside of the arm, elbow, and forearm, near six inches in length. Around this, the skin was in a state of mortification, more than half way up the outside of the arm, and as far downwards, on the outside of the forearm. The skin still adhered to the biceps flexor muscle in the arm, and flexor muscles in the forearm, by a dark-colored cellular membrane. Every where else in the arm and forearm, from the axilla downwards, the skin was separated from the muscles; and between these parts there was a dark-colored fluid, with an offensive smell, and sloughs of cellular membrane, resembling wet tow floating in it. The muscles had their natural appearance every where, except on the surface, which was next the abscess. Beyond the limits of the abscess, blood was extravasated in the cellular membrane; and this appearance was observable on the right side of the back as far as the loins, and on the right side of the chest over the serratus major anticus muscle.

In the thorax the lungs had their natural appearance. The exterior part of the loose fold of the pericardium, where it is exposed, on elevating the sternum, was dry, resembling a dried bladder. The cavity of the pericardium contained half an ounce of serous fluid, which had a frothy appearance from an admixture of bubbles of air. On cutting into the aorta, a small quantity of blood escaped, which had a similar appearance. The cavities of the heart contained coagulated blood.

In the abdomen, the cardiac portion of the stomach was moderately distended with fluid: the pyloric portion was much contracted; the internal membrane had its vessels very turgid with blood. The intestines and liver had a healthy appearance.

The gall bladder was moderately full of healthy bile. The lacteals and thoracic duct were empty; they had a natural appearance. In the cranium, the vessels of the pia mater and brain were turgid with blood; the ventricles contained rather more water than is usual; and water was effused into the cells, connecting the pia mater and tunica arachnoides. It is to be observed, that these appearances in the brain and its membrane are very frequently found in cases of acute diseases, which terminate fatally.

The following cases were sent from India, to my late friend, Dr. Patrick Russel: they arrived after his death, and Mr. Claude Russel very kindly gave them to me, knowing the subject of them to be one in which I had taken an interest. As they correspond in many of the circumstances, with that which has been detailed, I have inserted them in this place, as well as an experiment, which I had an opportunity of making in the West Indies, on the effects of the snake's poison on animals.

A boy, a slave of a gentleman in India, was bitten by a snake, called Kamnlee, by the natives, in the lower part of the arm, at eight o'clock in the evening. The blood flowed very freely for some time. He died next day at noon, in great pain.

A seapoy, sixty years of age, was admitted into the hospital of his regiment, under the care of Mr. Perrin, assistant surgeon, at four o'clock in the afternoon, of the 15th of October, 1802, in consequence of his being bitten by a cobra di capello, on the back part of the hand. At the time of his admission, he complained of pain running up the arm. He immediately took a drachm of eau de luce; and this dose was repeated every half hour; and the same remedy was applied externally as a lotion to the arm and forearm. At four o'clock in the morning of the 16th of October, the pain began to increase, and the arm to swell with great hardness and stiffness, and tumor in the axilla, with much inclination to vomit. He took twelve grains of Dr. James's powder, which brought up a great quantity of bilious matter. He drank copiously of warm water, but no perspiration was induced. He appeared relieved for a short time. At eight o'clock in the morning, the arm was distended, painful and discolored. He took four ounces of brandy, and repeated it every hour, until twelve o'clock, with a drachm of

eau de luce occasionally. At this time he was a little revived. The brandy was reduced to two ounces, which were carefully and regularly given every hour, until twelve at noon, on the 17th of October, when the arm was more free from pain, but much swelled, hard, and black: his spirits and pulse also were considerably relieved. The eau de luce was now omitted, but the brandy was continued every hour, until twelve o'clock at noon on the 18th of October, when the stiffness and tumor in the axilla had disappeared; the arm was still swelled, but was softer, and less painful. The brandy was omitted; at night he took six grains of Dr. James's powder. On the 19th of October, the arm was less, softer, with little or no pain; a blister was formed and burst on the back of the hand, which discharged three ounces of black fetid pus. On the 20th, an abscess burst on the hand, in the same situation as the blister, which discharged a large quantity of fluid, having an offensive smell. He was directed to take a drachm of Peruvian bark, in port wine, every two hours. On the 22d, the swelling was gone, but the discharge was considerable. From this time, the man gradually, but slowly recovered, with the loss of the use of his forefinger, which remained permanently extended, and some of the other fingers were affected in a less degree.

In this case, the swelling of the arm was slower in coming on, and less extensive; the pain running up to the axilla, which preceded it, was mistaken for the effect of absorption.

In the year 1782, while in the island of St. Lucia, I made the following experiment.

A spotted dark-colored snake, about two feet in length, having the poison fangs on each side double, with the corresponding surfaces grooved, so as to form a canal for the poison, was put into a square tin box, open at the top, in which a half grown rat was confined. The rat expressed great terror, and remained crouching in one corner of the box, with its eyes fixed on the snake, which lay coiled at some distance; they were allowed to remain a few minutes in this situation. I then raised one end of the box, which caused the snake to slide along the smooth surface, till it came in contact with the rat, which it immediately bit. The rat died in a minute after the bite. I re-

moved it immediately from the box, by means of a long pair of forceps. The wounds made by the fangs were marked by two specks of blood immediately below the shoulder-blade. On dividing the skin with a scalpel, the cellular membrane under it was found entirely destroyed: the muscles mere detached from the ribs, and from a small portion of the scapula. The parts immediately surounding the bite were exceedingly inflamed; as far as I could trust to memory, the appearances very much resembled those produced on the muscles of a dog's thigh, by the application of white arsenic, in consequence of which death ensued in about sixteen hours.

Fifteen hours after the death of the first, a second rat was bitten by the same snake. The rat was much irritated, and bit the snake in the neck, so violently, that the latter died in about ten minutes. The rat continued very lively for about six hours, and then died. On examination after death, the bite was found to have been inflicted on the left side of the navel; and the abdominal muscles at that part were in the same state as in the other rat, but in a less degree.

It appears from the facts which have been stated, that the effects of the bite of a snake vary, according to the intensity of the poison.

When the poison is very active, the local irritation is so sudden and so violent, and its effects on the general system are so great, that death soon takes place. When the body is afterwards inspected, the only alteration of structure met with is in the parts close to the bite, where the cellular membrane is completely destroyed, and the neighbouring muscles very considerably inflamed.

When the poison is less intense, the shock to the general system does not prove fatal. It brings on a slight degree of delirium, and the pain in the part bitten is very severe; in about half an hour, swelling takes place from the effusion of serum in the cellular membrane, which continues to increase with greater or less rapidity for about twelve hours, extending during that period into the neighbourhood of the bite; the blood ceases to flow in the smaller vessels of the swollen parts; the skin over them becomes quite cold; the action of the heart is so weak, that the pulse is scarcely perceptible; and the stomach is so irritable that nothing is retained on it. In about sixty hours these symp-

toms go off; inflammation and suppuration take place in the injured parts; and when the abscess formed is very great the patient proves fatal. When the bite has been in the finger, that part has immediately mortified. When death has taken place under such circumstances, the absorbent vessels and their glands have undergone no change similar to the effect of morbid poisons, nor has any part lost its natural appearance, except those immediately connected with the abscess.

In those patients who recover with difficulty from the bite, the symptoms produced by it go off more readily, and more completely than those produced by a morbid poison, which has been received into the system.

The violent effects which the poison produces on the part bitten, and on the general system, and the shortness of their duration, where they do not terminate fatally, has frequently induced the belief, that the recovery depended on the medicines employed: and in the East Indies, eau de luce is considered as a specific for the cure of the bite of the cobra di capello.

There does not appear to be any foundation for such an opinion; for, when the poison is so intense, as to give a sufficient shock to the constitution, death immediately takes place; and where the poison produces a local injury of sufficient extent, the patient also dies; while all slighter cases recover.

The effect of the poison on the constitution is so immediate, and the irritability of the stomach is so great, that there is no opportunity of exhibiting medicines till it has fairly taken place, and then there is little chance of beneficial effects being produced.

The only rational local treatment, to prevent the secondary mischief, is making ligatures above the tumefied part, to compress the cellular membrane, and set bounds to the swelling, which only spreads in the loose parts under the skin; and scarrify freely, the parts already swoln, that the effused serum may escape, and the matter be discharged, as soon as it is formed. Ligatures are employed in America, but with a different view, namely, to prevent the poison being absorbed into the system.

SELECTED REVIEWS.

Observations on Fungus Hæmatodes, or Soft Cancer, in several of the most important organs of the Human Body; containing also a comparative view of the Structure of Fungus Hæmatodes, and Cancer, with Cases and Dissections. By James Wardrop, F. R. S. E. Fellow of the Royal College of Surgeons, and one of the Surgeons to the Public Dispensary of Edinburgh. Illustrated with Plates. Edinburgh, 1809. 8vo. *pp.* 205.

From the Edinburgh Medical and Surgical Journal, for April 1810.

The morbid structure, which forms the subject of these observations, has hitherto been very generally confounded with cancer. By some surgeons it has, indeed, been sometimes distinguished by the epithet of soft. Cases of this tumor occurring in the inferior extremities and shoulder were, however, first particularly noticed by Mr. John Burns, under the name of spongoid inflammation; and others have since been described in the extremities, and in the female breast, by the title of fungus hæmatodes, by Mr. Hay of Leeds. In the classification of Mr. Abernethy, it is distinguished by the name of medullary sarcoma, and is described to have been found not only in the extremities, but also in the testicle, and in various parts.

Much, however was still wanting to complete the history of this tumor; and Mr. Wardrop, whose attention was particularly called to the subject, from having had an opportunity of observing an example of it, in its early stage, affecting the eyeball, and of tracing its whole progress to its fatal termination, has, in these pages, brought together a number of interesting facts and observations, which, if they do not complete the history, have enabled him to extend considerably our knowledge of the disease. The plan of his inquiry is stated to be,

"To describe the appearances, and point out the character of fungus hæmatodes in some of the most important organs of the human body. As these may be more easily traced, and more distinctly and satisfactorily seen during the whole pro-

gress in the eye than in any other part, I shall first give a description of the disease in that organ; it will be next examined in the superior and inferior extremities, in the testicle, mamma, uterus, and ovarium, liver, spleen, lungs, and thyroid gland; in all of which its existence has been ascertained. Having done this, some general views of the change of structure in fungus hæmatodes will be pointed out, and a comparison made between it and the cancerous structure; the texture or textures in which it originates will also become an object of investigation; and, afterwards, such practical conclusions will be drawn from a review of all the facts in the history of the disease, as our data appear to warrant."

We shall now endeavour to lay before our readers a very abridged account of some of the most important of these observations. The numerous and ably selected cases which illustrate the text, and make the disease familiar to the intelligent reader, we must, for the present, pass over in silence.

The progress of fungus hæmatodes of the eyeball appears to be marked by the following appearances. Dilatation and immobility of the pupil, an amber or greenish color in the bottom of the eye, arising from a solid substance, which grows so as to occupy the whole posterior chamber of the eyeball, where it has sometimes been mistaken for cataract, and advances at last towards, and occupies, the anterior chamber; the cornea ulcerates; the eyeball becomes unequal and rugged; a fungous tumor shoots out, which rapidly acquires a great bulk; is generally of a dark-red or purple color, coated with coagulated lymph, readily torn, bleeding profusely, sloughing, and throwing out successive growths, and accompanied with tumor and inflammation of the parotid, of the maxillary, and other neighbouring glands.

On dissection, a tumor is found in the posterior chamber, extending from the entrance of the optic nerve forwards, and displacing and destroying the humors of the eye. This tumor has the appearance of medullary matter, a white opake homogeneous substance, of the pulpy tenacity of brain, and sometimes as soft as custard, with filamentous cellular matter interposed. Though generally whitish, it has been found of a

reddish, and of a dark-brown color, and almost black. Bony or gristly particles have sometimes been observed in it. The sclerotic coat is little changed, but all the other parts of the eyeball are more or less disorganized. The retina has always been found completely changed; and the optic nerve, and sometimes the brain itself, are involved in the disease.

"In some cases the nerve retains its natural form, becoming thicker, much firmer and harder than natural, of a brownish ash color, and losing that tubular appearance which is observed in the healthy nerve with the naked eye. In other examples of the disease, the optic nerve, besides being altered in structure, is split into one or more pieces, the morbid growth filling up the intervening spaces surrounding the different portions of the nerve, and forming one connected mass with the contents of the eyeball. The divided portions of the nerve lose entirely their natural structure and color, becoming soft and pulpy, and sometimes of a deep yellow hue. In some cases the nerve has a flesh color, and more of the texture of sound liver. In many no distinction can be made between the neurilema and medullary portions, whilst, in others, changes take place in the one which are not observed in the other. In the case formerly mentioned, where the contents of the eyeball and external tumor had a very remarkable dark appearance, the nuerilema remained unchanged, but the medullary portion of the optic nerve had the same dark-brown color, as far up as the nerve had been divided in the extirpation of the eyeball. After the patient's death, which was nearly five months after the operation had been performed, it was found, on dissection, that the same singular black appearance extended along the medullary portion of the optic nerve to beyond the union of the tw nerves; and, what is an important fact to the physiologist, this case proved, in a very striking manner, that the optic nerves do not decussate each other. The nerve of the right eye arose from the right side of the brain, and was healthy all the way to where it formed the retina; whereas the left optic nerve was black, from the place where it had been divided during the operation of extirpating the eyeball, to beyond the union of the two nerves."

One case only, that related by Mr. Hayes in the 3d vol. of the London Medical Observations and Inquiries, has come to the knowledge of our author, in which the retina or optic nerve appeared to be unchanged in structure. He is nevertheless inclined to think that the disease begins in the retina.

When the absorbent glands, in the progress of the disease, become enlarged, they are found to be converted into the same medullary looking matter; and when they ulcerate, a very unhealthy sloughy sore is produced.

Out of twenty-four cases of this disease in the eye, twenty of them were patients under twelve years of age, a proof of its dissimilarity to cancer, which is for the most part confined to those advanced in years. Vision is commonly lost even before any disease is remarked to exist by the parents of such children. In a great proportion of cases, the patient appeared to have received a blow, which brought on inflammation, and, a few days after, the colored substance became perceptible at the bottom of the eye. In others, a slight redness of the white of the eye may be perceived, with indistinct vision, slowly increasing, with uneasy aking pain, till the eyeball burst, and the fungus appear.

The conclusion from the whole is very melancholy. The disease has resisted the power of every mode of treatment; and the last resource, extirpation, has been equally unsuccessful. All, with the exception of one doubtful case, have terminated fatally. Probably the operation has been too long delayed, and performed not until the parts within the cranium were irrevocably diseased. Though the retina and optic nerve seem in every case very early affected, the earlier the eye is extirpated, the greater hope may be entertained of success. "It is an experiment, at all events, which well merits trial; and were I in any case to be assured of the existence of the disease in the early stage, I would have no hesitation in urging the performance of the operation."

In the extremities, fungus hæmatodes has been met with contiguous to the ankle and knee-joints, on the shin, calf of the leg, on the thigh, in the groin, and on the hip-joint, in the wrist, arm, forearm, and over the elbow and shoulder-joints. In these parts it has occurred at all the different periods

of life. The first appearance is that of a small movable tumor, smooth, equal, and firm, though not so hard as scirrhus. If deep seated, its commencement is less distinct; it advances slowly. When the swelling becomes large, it has a soft elastic feel; and a sense of fluctuation is sometimes so striking, that the swelling has been punctured to discharge the supposed contained fluid. But no fluid follows the operation. If the tumor be thus opened, or when the covering skin naturally ulcerates, a fungus begins to rise, which rapidly increases in bulk. The fungus is round, ragged, and unequal in its surface, of a dark-red color, easily torn, and bleeding on the smallest friction. It has generally a very narrow neck, and, in some cases, spreads out so much as completely to cover the edge of the ulcerated integuments. When the fungus acquires a very large size it sloughs, and renders the discharge extremely fetid, and hemorrhage often takes place. The degree of pain accompanying the disease is various. When the tumor is small the pain is trifling, but as it enlarges it becomes more tender; in some cases it has a sharp stinging pain darting through it; and, when the disease is far advanced, it is generally attended with acute pain.

In the progress of the disease, the absorbent glands, in the course of circulation, are contaminated and become enlarged; and, as the fatal termination approaches, the swelling of the glands, and the number affected are often prodigious, particularly in the inferior extremities; for here the glands, along the course of the iliac vessels and aorta, all contribute to form one formidable disordered mass within the abdomen.

On dissection of fungus hæmatodes in the extremities, the primary tumor exhibits the true medullary structure, and is commonly found to consist of distinct portions or lobes, separated by thin membranous intersections; color pale gray, or brownish red. Some portions, in color and texture, resemble brain; some are of a deep yellow, like the yolk of egg; and others resemble coagulated blood or liver. The affected absorbent glands acquire a structure similar to that of the original tumor.

All remedies are useless against this disease. The removal of the tumor by the knife has been in many cases attempted;

but in all the practice was unsuccessful, the disease afterwards returning at the place from which the tumor was removed. The only chance, therefore, of saving the patient's life, is by early amputation of the limb.

In the testicle the progress of the tumor is at first slow, and attended with little pain. When it has acquired a considerable bulk, it is soft and elastic, and communicates to the touch a sense of fluctuation so imposing, that it has been mistaken for hydrocele; from which it may be distinguished by the history of its rise and progress, by want of transparency, and by its greater comparative weight. When very large, the softness becomes more unequal, and, in some places, the tumor feels hard; the scrotal veins become varicose, and the inguinal glands and spermatic cord become diseased. In no case, within our author's knowledge, have the integuments of the scrotum given way; the irritation and fever, it is observed, created by the extent of disease, seem to cut off the patient before ulceration could take place. Fungus hæmatodes affects the testicle, as well as most other organs, more frequently in early life. In many cases the disease has appeared to originate from a blow, or other local injury. The termination of the disease has been uniformly fatal; all who have been cut for it have died; our only future hope, therefore, is in an earlier operation.

In the dissection of those who have died in consequence of fungus hæmatodes, of some of the external parts already described, tumors of the same medullary structure have been frequently found in some of the internal organs. Examples are accordingly given of fungus hæmatodes, or structures similar to this, which were discovered in the liver, in the spleen, and in the kidney.

The soft tubercle or tumor of the lungs, described and delineated by Dr. Baillie, is believed to be referable also to this disease.

An example of fungus hæmatodes in the uterus occurred to Mr. Burns; and our author thinks, that a disease of the ovarium described by Dr. Baillie, in which the organ is converted into a pulpy matter, and a similar case he has himself met with, show that the ovary is subject to this change of structure.

In the description which Mr. Hey has given of fungus hæmatodes, three cases are mentioned where the female breast is said to have been affected by it.

" In none of these cases, however," continues Mr. Wardrop, " nor in two others which I carefully dissected, and which appeared to be very analogous to those mentioned by Mr. Hey, was there that medullary structure in any part of the tumor, which has been found to be a constant appearance in fungus hæmatodes in all the other organs where it has been met with. I would therefore be led to doubt the nature of the disease in the cases alluded to, had not fungous tumors arisen from the cicatrix; and being aware at the same time that a very considerable difference may arise in the appearance of this disease in the different organs, the natural structure of the mamma being as unlike that of the sound eyeball or liver, as the same disease in these organs."

This last remark, however we think of no great weight; the eyeball and liver are as unlike in structure as any two parts of the body can be, and yet the medullary structure of fungus hæmatodes is found in both. From the cellular structure of the tumor of the mamma, the interposed transparent glairy fluid found in the cells, the firm membranous intersections found in it, and the want of medullary character, we perfectly agree with Mr. Wardrop, that the propriety of referring this tumor to fungus hæmatodes is very doubtful.

Having thus examined the appearances of fungus hæmatodes in the different parts of the body where it has been found, our author sums up the whole, by exhibiting a comparative view of the structure of fungus hæmatodes and cancer.

Scirrhus is hard, firm, and incompressible, composed of opake fibrous septa, variously arranged, with a softer inorganic semitransparent glutinous substance interposed. The tumor is destroyed by the process of ulceration which ensues, and which consumes in its progress also the neighbouring parts; and the fungus produced from cancer has a firm texture.

" Fungus Hæmatodes presents, on dissection, a very different series of phenomena from the scirrhous tumor. When

it appears in the external parts of the body, and has not yet acquired a considerable bulk, instead of being hard and unyielding, it is soft and elastic, and has an equal surface, giving, in most cases, more or less, a sense of obscure fluctuation. Its form, when taken out of the body, is determined and accurately circumscribed, having generally a distinct covering of condensed cellular membrane. In place of the hard fibrous-looking substance, the principal component part of scirrhous tumors, the morbid growth in fungus hæmatodes consists of a soft pulpy matter, which mixes readily with water, and is hardened by acids, and by boiling in water; and it has been also compared by all who have attempted to describe it to medullary matter, in color and consistence. When the skin or covering of fungus hæmatodes has been eroded by the progress of the disease, instead of the morbid growth being destroyed by ulceration, a fungus arises from it, and the tumor seems only to increase more rapidly in bulk. If the fungus hæmatodes is not interrupted in its progress, both the original tumor, and the fungous mass growing from it, attain a large size; and the fungus, instead of having a firm texture, like that which arises from the cancerous ulcer, is a dark-red and purple colored mass, of an irregular shape, and of a soft texture, is easily torn, and bleeds profusely when slightly injured."

Fungus hæmatodes is found to exist in a greater variety of organs, as in the liver, spleen, kidney, and lungs; organs where the scirrhous structure has never been demonstrated. Those advanced in life are most subject to cancer; fungus hæmatodes is rather to be cónsidered as a disease of early life.

In what particular system, or texture of the organs, does fungus hæmatodes originate?

" It appears certain, that in all those cases in which the disease affected the eyeball, we were ignorant of its existence, before either the optic nerve or retina were changed. In all of the cases, an alteration in the structure of the retina, and an imperfection in the exercise of its functions, were the first symptoms of the disease; and in those cases where the disease advanced farther, no remains of the retina could be detected; and the structure of the optic nerve itself, was changed,

even, in some, as far as the thalamus. In one case, the optic nerve, besides its alteration in structure, was split into different portions by the tumor, which latter seemed to be formed in its external structure. In another case, the medullary portion of the nerve was changed, and the disease extended just to that place where it loses its neurilema, and becomes altogether medullary. In other cases, the neurilema and medullary portions were equally changed."

These observations would lead to a conclusion, "that the disease consists in a morbid change of the nerve itself; and that a growth of medullary matter takes place in this disease, analogous to what is observed in new formations of bony matter, of fat, of skin, or of bloodvessels."

When we reflect on the great variety of organs in which this growth is met with, it appears to us more probable, that the medullary tumor is a morbid matter sui generis, which may originate in more structures than one.

But, as our author well observes, "it is extremely difficult to bring forward, on this part of the subject, any thing conclusive. It remains, therefore, an object of most interesting inquiry, if in other parts of the body, which are affected with this disease, besides the optic nerve and retina, any structure of the nerves of the organ can be detected."

An account of Spina Bifida, with remarks on a method of treatment proposed by Mr. Abernethy. By Thomas Verney Okes. Cambridge printed; 8vo. 1810. *pp.* 39.

From the London Medical and Physical Journal, for October, 1810.

It is the fate of all human invention to have in it the alloy of imperfection. The practice of medicine, and even the art of surgery, which is vaunted to have more of precision and certainty than its congenors, partake of this penalty. The quaint appellative, *noli me tangere*, given to a species of harpers, has been too restricted. The course of actual practice has not unfrequently presented original conformation, and sometimes morbid alteration, which should have affixed to them, *in terrorem, noli me tangere;* of this class is *spina bifida*

A long acquaintance with the steady judgment and practical skill of Mr. Okes, made us take up his pamphlet with a predilection in its favour. For it is to such men, though, perhaps, unskilled in the art of bookmaking, we are to look for the lessening of human misery, by the improvement of medical science. If in the present instance the experience of this gentleman has enabled him only to give negative instruction, we hope to see him unlock the stores of practical knowledge which many years of application must have accumulated.

The just reward of diligence and eminent abilities is found in that currency of opinions which arises out of reputation. But sometimes has this been injurious, by stamping a value on erroneous doctrines. The deservedly high character of Abernethy induced Mr. Okes to investigate the nature of *spina bifida*, a disease of which Mr. Abernethy had published some cases, and advised a method of treatment from analogy, extremely hazardous, if not always fatal. "From the success with which the evacuation of the matter in lumbar abscess, by means of the trocar, has been attended, Mr. A—— was induced to recommend a similar process in *hydrorhachitis:*" and also to advise pressure upon the punctured saculus to promote absorption. A number of cases are cited and arguments employed by Mr. Okes to show the dangerous tendency of this practice; and from them are deduced the subsequent corollaries,

1. If an hydrorhactic tumor should ulcerate or slough, so that an opening be made, the patient will inevitably die.

2. If the contents be evacuated by trocar or lancet, and the opening be left unclosed, the patient will die.

3. If a ligature be applied round the base of the tumor, the patient will die.

4. If the contents be evacuated by trocar, and the opening be closed and healed by the first intention, the sac will not contract so as to prevent a fresh accumulation of lymph, but it will be speedily and repeatedly reproduced, and no advantage will be gained by the operation.

The description of *spina bifida*, with which the pamphlet commences, we insert with the view of disseminating practical knowledge.

"The disease which is usually called spina bifida, sometimes

divided spine, spinola, and more properly hydrorhachitis, proceeds from a mal-conformation of the spine, and originates with the fœtus in utero. The spinal processes, and sometimes the lateral processes of some of the vertebræ are wanting, by which means there is a longitudinal opening of the bony cylindrical channel which contains the medulla spinalis. This deficiency sometimes takes place in one part of the spine, and sometimes in another; but I believe more commonly in the vertebræ of the loins, or in the os sacrum, than in any other part. It is remarkable that where there is this defect in the formation of the bones, there is generally a corresponding defect of the integuments over that part of the vertebræ; for the cutis and membranæ adiposæ are wanting for a considerable space, and the opening will be found covered only by a very thin, tender skin, and so transparent that the contents may be seen through it; and their covering is doubtless a production of the duramatral coat of the medulla spinalis. Sometimes, however, the common integuments are perfect, and of their natural thickness and opacity. From the difference in the coverings of the tumor it may be distinguished into two sorts, the transparent and opake. The tumor which is formed contains a clear fluid, like the lymph found in the lateral ventricles of the brain; and hence the disease has acquired the name of hydrorhachitis. There is another shape under which this disease appears, that is when there is no deficiency in the formation of the vertebræ themselves, but where the fluid and the duramatral coat are forced through a small separation of the spinous processes, producing a tumor of the back with a small base. This has given rise to a proposal for what I consider a dangerous mode of practice; for from the smallness of the base of the tumor, practitioners have been induced to suppose that it is easily removable: experience, however, has proved that this cannot be safely attempted."

Cases from Sulpius, Ruysch, and Morgagni, with plates, and observations on the analogy which *spina bifida* has with diseases intimately connected with the coverings of the brain, illustrate and inforce the author's objection to Mr. Abernethy's proposed practice. For several interesting histories of this dis-

ease we refer to the preceding volumes of the Medical and Physical Journal.

Though we have no extravagant liking for the dainty phrases, piquant remarks, and holiday terms of modern authorship, we would be well pleased to see a judicious practitioner sufficiently master of composition, to place his observations in the best light; and we recommend to Mr. Okes, with a sincere regard for his useful talents, that attention to style and arrangement proper to give force and character to his future productions.

On the Structure and Uses of the Spleen.

By EVERARD HOME, F. R. S.

Philosophical Transactions, Part I. 1808.

From the Edinburgh Medical and Surgical Journal, for 1809.

Mr. Home, while investigating the structure of the stomachs of different animals, observed, that in the fourth stomach of ruminating animals, in the single stomach of others, and even in the human stomach, there is a division, more or less evident, between the cardiac and pyloric portions; that while digestion is going on, these portions are separated by means of a permanent or muscular contraction; that the food is prepared, softened, and dissolved in the cardiac portion, and the chyle separated in the pyloric.

In some animals, as in the water rat, the separation between the cardiac and pyloric cavities is very remarkable, and their difference of structure and function abundantly evident; but, in all stomachs, this difference can be traced.

"The first instance in which this muscular contraction was observed in the human stomach, was in a woman who died in consequence of being burnt. She had been unable to take much nourishment for several days previous to her death. The stomach was found empty, and was taken out of the body at a very early period after death. It was carefully inverted to expose its internal surface, and gently distended with air."

"The contraction was so permanent, that after the stomach

divided spine, spinola, and more properly hydrorhachitis, proceeds from a mal-conformation of the spine, and originates with the fœtus in utero. The spinal processes, and sometimes the lateral processes of some of the vertebræ are wanting, by which means there is a longitudinal opening of the bony cylindrical channel which contains the medulla spinalis. This deficiency sometimes takes place in one part of the spine, and sometimes in another; but I believe more commonly in the vertebræ of the loins, or in the os sacrum, than in any other part. It is remarkable that where there is this defect in the formation of the bones, there is generally a corresponding defect of the integuments over that part of the vertebræ; for the cutis and membranæ adiposæ are wanting for a considerable space, and the opening will be found covered only by a very thin, tender skin, and so transparent that the contents may be seen through it; and their covering is doubtless a production of the duramatral coat of the medulla spinalis. Sometimes, however, the common integuments are perfect, and of their natural thickness and opacity. From the difference in the coverings of the tumor it may be distinguished into two sorts, the transparent and opake. The tumor which is formed contains a clear fluid, like the lymph found in the lateral ventricles of the brain; and hence the disease has acquired the name of hydrorhachitis. There is another shape under which this disease appears, that is when there is no deficiency in the formation of the vertebræ themselves, but where the fluid and the duramatral coat are forced through a small separation of the spinous processes, producing a tumor of the back with a small base. This has given rise to a proposal for what I consider a dangerous mode of practice; for from the smallness of the base of the tumor, practitioners have been induced to suppose that it is easily removable: experience, however, has proved that this cannot be safely attempted."

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"The first instance in which this muscular contraction was observed in the human stomach, was in a woman who died in consequence of being burnt. She had been unable to take much nourishment for several days previous to her death. The stomach was found empty, and was taken out of the body at a very early period after death. It was carefully inverted to expose its internal surface, and gently distended with air." "The contraction was so permanent, that after the stomach

had been kept in water for several days, in an inverted state, and at different times distended with air, the appearance was not altogether destroyed. Since that time, I have taken every opportunity of examining the human stomach recently after death, and find, that this contraction, in a greater or less degree, is very generally met with."

"That the food is dissolved in the cardiac portion of the human stomach, is proved by that part only being found digested after death; the instances of which are sufficiently numerous to require no addition being made to them. This could not take place, unless the solvent liquor was deposited there. Mr. Hunter goes so far as to say, in his paper on this subject, 'there are few dead bodies in which the stomach, at its great end, is not, in some degree, digested.' That the chyle is not formed there, and also, that it is completely formed before the food passes through the pylorus, is proved by the result of some experiments of Mr. Hunter's, made upon dogs, in the year 1760; and as they were instituted for a very different purpose, that of determining whether the gastric juice is acid or alkaline, the results were detailed without any possible bias." "In all the dogs, the food was least dissolved, or even mixed toward the great end of the stomach, but became more and more so towards the pylorus; and just within the pylorus, it was mixed with a whitish fluid, like cream, which was also found in the duodenum." "From the result of these experiments," continues Mr. Home, "as well as from the analogy of other animals, it is reasonable to believe, that the glands situated at the termination of the cuticular lining of the œsophagus, which have been described, secrete the solvent liquor, which is occasionally poured on the food, so as to be intimately mixed with it before it is removed from the cardiac portion; and the muscular contraction retains it there till that takes place. Such contraction being occasionally required in the stomach, accounts for its being more or less bent upon itself, which renders it more readily divided into two portions, by the action of the muscular fibres, at that part where the angle is formed."

We have thought it necessary to make these extracts from Mr. Home's papers on the structure of the stomachs of dif-

ferent animals, in order that those of our readers who have not yet had an opportunity of consulting them, might the better understand the account we are to give of his observations on the structure and uses of the spleen. And, for the like reason, we shall subjoin Mr. Home's general conclusions, drawn from the series of the facts and observations detailed in those papers.

" The solvent liquor is secreted from glands of a somewhat similar structure in all animals, but much larger and more conspicuous in some than in others." " These glands are always situated near the orifice of the cavity whose contents are exposed to their secretion.

" The viscid substance found on the internal membrane of all the stomachs, that were examined recently after death, is reduced to that state by a secretion from the whole surface of the stomach which coagulates albumen. This appears to be proved by every part of the fourth cavity of the calf's stomach having the property of coagulating milk.

" This property, in the general secretion of the stomach, leads to an opinion, that the coagulation of fluid substances is necessary for their being acted on by the solvent liquor; and a practical observation of the late Mr. Hunter, that weak stomachs can only digest solid food, is in confirmation of it.

" In converting animal and vegetable substances into chyle, the food is first intimately mixed with the general secretions of the stomach; and, after it has been acted on by them, the solvent liquor is poured upon it, by which the nutritious part is dissolved. This solution is afterwards conveyed into the pyloric portion, where it is mixed with the secretions peculiar to that cavity, and converted into chyle." *See Philos. Transac. part 2d*, 1807.

Believing, then, that the cardiac and pyloric portions of the stomach are separated from each other by a permanent or muscular contraction, and that they perform different and distinct functions during digestion, Mr. Home, in the paper now before us, endeavours to show, that there is between the cardiac portion of the stomach, and the circulation of the blood, a communication through the medium of the spleen; and that

the use of this organ is to carry off the fluids from the cardiac portion.

First, He observes that the fluids are chiefly found in the cardiac portion, while the contents of the pyloric are commonly of uniform consistence. It seemed, therefore, probable, that the fluids beyond what are necessary for digestion are carried out of the stomach, without ever reaching so far as the pylorus.

Secondly, He made the following experiment. The pylorus of a dog was firmly secured by ligature, and five ounces of water, colored with indigo, were injected into the stomach; at the end of half an hour, two ounces of nearly colorless fluid were rejected by vomiting. The dog was now killed. Though the pylorus was completely closed by the ligature, the pyloric portion of the stomach was empty and contracted. "The cardiac portion contained about two ounces of solid contents, enveloped in a gelatinous substance, and one ounce of water with little or no color, the indigo being completely separated from it, and spread over the surface of the internal membrane."

Two ounces of fluid had therefore escaped from the stomach in half an hour. No absorbents could be seen; but "the spleen was turgid, unusually large, and its external surface very irregular. When cut into, small cells were every where met with, containing a watery fluid, and occupying a considerable portion of its surface."

These cells he finds to be the glands of Malpighi, and corpuscles of Cuvier. These cells are only distinct, and seen to contain a fluid, when examined immediately after the stomach had received an unusual quantity of liquids. The fluid escapes when the cells are punctured. The cells are membranous, and have numerous arterial branches and plexus of veins ramifying on their coats.

The trunk of the splenic vein compared with that of the artery, Mr. Home found to be in point of size as 5 to 1.

Mr. Home repeated his first experiment, making use of an infusion of madder, instead of a solution of indigo, in hopes that the coloring matter might be detected in the spleen. The result, however, did not correspond to his expectation.

At last, on the suggestion of Mr. Brande, he made use of

rhubarb, which speedily passes into the blood, and tinges the urine very soon after being received into the stomach, and very small portions of which can be detected by means of the caustic alkali, used as a test. "Five drops of tincture of rhubarb, added to three ounces of water, are found to strike an orange tint, when the test is added."

By means of this test, the rhubarb was detected in the urine of different persons, in seventeen and twenty minutes after the tincture had been swallowed. These circumstances being ascertained, Mr. Home performed the following experiment.

"On November 17th, 1807, at thirty-five minutes past eleven o'clock, five drachms of a mixture of tincture of rhubarb and water, in the proportion of a drachm to an ounce, were injected into the stomach of a dog, whose pylorus was secured. At twenty minutes past one, two ounces of fluid were brought up by vomiting; ten minutes afterwards, another ounce of the mixture was injected, as were nine drachms more at half past four o'clock.

"The two last portions were retained, and at eight o'clock in the evening the dog was killed.

"On examining the parts after death, the pylorus was found to be completely secured; the stomach contained about two ounces of fluid; none of the absorbent vessels passing from its great curvature were in a distended state, so as to be rendered visible. The spleen was turgid as in the former experiment, and the urinary bladder full of urine.

"The urine, tested by the alkali, received a deeper tinge of rhubarb than the human urine, after rhubarb had been taken three hours by the mouth, and in other respects resembled it.

"When the spleen was cut into, the cells were particularly large and distinct. A portion of it was then macerated in two drachms of water, for ten minutes in a glass phial. All the parts were exposed to the water by its being divided in all directions. The water thus impregnated, was strained off and tested by the alkali, and immediately the redish brown color was produced in the centre, and no where else; but in less than a minute it began to diffuse itself, and extended over the whole.

"A similar portion of the liver was treated in the same way,

and the alkali was added to the strained liquor; but no change took place in it whatever. In this experiment, the rhubarb was detected in the juices of the spleen, as well as in the urine; and as there was no appearance of it in the liver, it could not have arrived there through the medium of the common absorbents, carrying it into the thoracic duct, and afterwards into the circulation of the blood."

Mr. Home here concludes, observing, " The discovery of this fact I consider to be of sufficient importance to be announced to the society, that when it is thus made public, I may be at liberty more openly, and on a more extensive scale of experiment, to prosecute the inquiry."

A Dissertation on Retroversion of the Womb, including some Observations on Extra-Uterine Gestation. By Samuel Merriman, M. D. 8vo. Lond. 1810. pp. viii—80.

From the London Medical and Physical Journal, for November, 1810.

THE substance of this dissertation originally appeared in the volumes of this journal. In its present dilated and improved form, it is intended to establish two points of importance in the theory of pregnancy, and the practice of obstetrics.

Retroversion of the uterus, as a fact occurring at one period of uterine gestation, is well known; the extension of this displaced position of the womb to the last term of pregnancy is not, however, so fully ascertained; neither has it hitherto been subjected to much investigation. Dr. Merriman adduces several cases to prove the existence of this state of the uterus in the latter months of gestation, and that it also gives rise to another fact in the history of pregnancy, commonly denominated *extra-uterine gestation;* but which has, from its discordance with established physiological principles, remained doubtful, obscure, or " incomprehensible."

That retroversion of the uterus must have occurred at all periods cannot be doubted; but that its real phenomena have only lately been understood occasions more regret than surprise. Neither Mauriceau, Lamotte, nor Deventer, who attended particularly to a state of the womb, which we denomi-

nated its obliquity,* had any precise knowledge of this altered position of the uterus, nor of the effect it produced on the bladder and rectum; deranging the functions, and obstructing the operations of these organs. "The first person, who enter-"tained any correct idea of this accident, was M. Gregoire, an "accoucheur of considerable reputation at Paris, about the "middle of the last century, and a lecturer on the practice of "midwifery. M. Gregoire's lectures were attended by many "students, who afterward became celebrated accoucheurs; and "among others our countryman *Smellie:* yet his doctrine upon "this subject seems to have been recollected by only two of "his pupils,—the French accoucheur M. *Levret*, and Mr. "*Wall;* and from the latter the accoucheurs of England first "gained information on this subject."

"The lectures which Gregoire delivered were never printed; "and therefore it is impossible to know exactly what opinion "he had formed of this accident; but that he was aware, of the "*fundus uteri* being thrown down between the vagina and "rectum, is evident from the directions which he gave for re-"placing it†. In the year 1754, Mr. Wall, who had settled in "London, was called to attend a woman labouring under a "suppression of urine, from a retroversion of the uterus; and "being convinced that it was a case of the kind described by "Gregoire, he endeavoured to relieve his patient by the "method taught by that lecturer; but failing in his object, he "called in the assistance of the late Dr. William Hunter. Their "united endeavours in various ways were unavailing, and the "woman died! Dr. Hunter, with the most laudable desire to "disseminate knowledge, having obtained leave to open the "body, invited a number of gentlemen of the faculty of me-"dicine to a public lecture, which he read for the purpose of "making the disease generally known. Drawings were taken

* *Rien ne lui fit plus d'honneur, says his biographer, que d'avoir prouve que l'obliquité de la matrice est une des premières causes des accouchemens dificiles, & d'avoir indiqué la manœuvre que demandent les accouchemens de cette espece.*

† M. Gregoire instructed his pupils, that with one finger in the vagina and another in the rectum, an attempt should be made to raise the fundus and to replace the uterus. This was advised to be done while the woman was lying on her back, an unfavourable position for the purpose: for, should this manœuvre ever be deemed necessary, the objects of it may be accomplished with more facility while the patient is resting on her elbows and knees.

"of the parts, from the dissection of this woman, and an en-
"graving from these was inserted in Dr. Hunter's splendid
"*Anatomy of the Human Gravid Uterus.*" This case, however, did not come fully before the public, until, in 1771 it was printed in the 4th volume of the Medical Observations and Inquiries (p. 400), as an appendix to a history of retroverted uterus, there related by Mr. Lynn, of Woodbridge in Suffolk. Mr. Lynn's narrative is, we apprehend, the first printed account of this form of retroverted uterus published in England.

From the year 1771 this accident has so often been described, that its symptoms are perfectly understood, and are relieved with great certainty by the simple process of introducing the catheter so frequently as to prevent the bladder being distended with urine.† For many useful observations on this form of

† In the cure of retroverted uterus, the principal reliance is to be placed upon the introduction of the catheter; and this should be done twice at least in twenty-four hours. Care is likewise to be taken to keep the bowels open, and rest is to be enjoined. By pursuing this plan steadily, the mal-position of the uterus is usually overcome in a few days. It is still customary with some practitioners of eminence to make use of artificial means for replacing the womb, after the bladder has been emptied and the bowels opened; and there can be no great objection to making such an attempt, provided it be done cautiously, and that no (improper) force be made use of. In general, however, nothing of this kind is either necessary or advisable. p. 24.

In many cases of retroverted uterus which have fallen under our care, the catheter thus employed, enjoining a recumbent posture, and attending to the state of the bowels, has been completely successful. In some of these cases the uterus was alarmingly impacted in the pelvis; yet the termination was always fortunate. The introduction of the catheter, and the emptying the bladder by that means, being the desideratum in the management of this complaint, the following practical observations by *Dr. Denman* cannot fail to be acceptable "It cannot be disputed (*Introduction, vol. i.* 140.) but that all attempts to restore the *uterus* to its natural position, before the distention of the bladder is removed, must be fruitless, as the *uterus* will be irresistibly borne down by the pressure of the superincumbent *bladder*. The first step then to be taken for the relief of the patient is, to draw off the urine; yet there is always in these cases great difficulty in the introduction of the common catheter, because the urethra is elongated, altered in its direction, and pressed against the ossa pubis by the tumor formed by the retroverted uterus; and many women, when the *uterus* was retroverted, have lost their lives from the want of expertness in introducing the *catheter*. But the attending inconveniences may be avoided or surmounted by the use of a flexible *catheter*, slowly conducted through the *urethra*. I say slowly, because, whatever *catheter* is used, the success of the operation, and the ease and safety of the patient, very much depend on this circumstance. The *catheter*, when introduced, should not be carried farther into the bladder, when the urine begins to flow, unless it ceases before the distention is removed; which in some cases happens in such a manner, as to give us an idea of a bladder divided into two cavities."

the disease, we are compelled, though unwillingly, to refer to the dissertation itself; and can only remark, that retroversion has also recurred in the unimpregnated state of the uterus, when it has been enlarged by disease. Of this an instance is related by Dr. Merriman; and Mr. John Pearson (Observations on Cancerous Complaints, 8vo. Lond. 1723), on examination, in a case of diseased uterus, "found it hard, immovable, and "so much enlarged, that it filled up the superior part of the "vagina: it was also retroverted, the *os uteri* pressing against "the bladder, and the *fundus uteri* compressing the rectum." p. 114. In these cases, however, it is obvious that the danger, as arising out of the position of the uterus, will neither be so great, or approach with such rapid strides, as in the impregnated state of that organ.

The continuance of the impregnated uterus in a retroverted position to the last period of utero-gestation, is a fact possessing both novelty* and interest; especially as Dr. Merriman deduces conclusions from it, explanatory of what has been deemed *extra-uterine gestation*.

Of this state of the uterus Dr. Merriman relates two instances; one of them is that which occurred to Dr. Jackson, as specified in the note below, and the other is a minutely circumstantial history of a case which happened in 1806. It is hardly to be doubted, however, that this variety of retroverted uterus, differs very essentially from that which occurs in the early period of pregnancy. In the malposition of the uterus, prior to the rising of that organ above the brim of the pelvis, the danger is hourly increasing by the increasing size of the uterus while impacted in that bony cavity; and by which its pressure, both on the bladder and rectum, is carried to a point that completely obstructs the expulsion of their contents. In the other variety, that which continues to the full term of utero-gestation, the womb being necessarily above the brim of the pelvis, and lying among parts that may recede from its pressure, though much inconvenience will arise, no urgent danger presents till the period of parturition. We mistake

* We have much satisfaction in stating, that our friend Dr. H. J. Jackson, of Hanover-street, in a judicious little work, (*Cautions to women respecting the state of pregnancy, &c.* 8vo. Lond. 1798,) published the first case of this disease.

Dr. Merriman exceedingly, if he does not lead his readers to understand that this second variety, or that which lasts to the end of utero-gestation, is a continuance of the first variety, or the retroverted uterus of early pregnancy; and that it is one of its terminations.* "It has been," he says, "the almost uniform "opinion of writers on the retroversion of the gravid uterus, "that a suppression of urine must necessarily be produced by "this unnatural situation of the womb, and that this suppression "must be removed by art; otherwise, they say, abortion will "take place, or a still more melancholy event, mortification, or "rupture of the bladder, and consequently the death of the "patient will ensue; and, in cases where suppression of urine "has come on, this has unquestionably *been the usual progress* "and termination of the complaint, unless proper means of "cure have been had recourse to at the commencement of the "disease. It is, however, consolatory to know, that, under "some circumstances, *the uterus may remain in a state of re-* "*troversion* for a very great length of time, even to the com- "pletion of the period of utero-gestation, without producing "a total suppression of urine, or any other very uncommon "or alarming symptoms." (p. 25.) It is probable, however, and it is a fact of some importance both as to the true history of the disease and to the practice, that these are two distinct complaints; one being necessarily confined to the first period of utero-gestation, that is, before the uterus rises above the pelvis; the other, as necessarily occurring in that period when, in its enlarged state, the womb has risen into the cavity of the abdomen: one being accompanied with immediate and urgent danger, the other with injurious consequences remote and uncertain. It does not appear that those who have suffered under that variety of retroverted uterus, which continues to the time of parturition, have experienced the symptoms and the haz-

* At page 76, Dr. Merriman puts this past all doubt, for he there positively says, "that the uterus, which has become retroverted in the earlier stages of pregnancy, "*may continue in that state* till the full period of gestation has elapsed." It is not designed to contend that the two varieties of retroversion may not exist at different periods in the same pregnancy; but if they do exist, that the coincidence is accidental, and that they have no dependence one on the other. In Mrs. F——'s case there is no ground to presume an early retroversion. In the case related by Mr. Kelson there was an early retroversion, but this was completely removed long before the accession of the other disease.

ards of that which appears in early pregnancy. "Mrs. F—— "did not suffer more, during her pregnancy, than most other "women, except that for the *last two or three months*, she was "troubled with difficulty in parting with her urine, and con- "siderable pain in the act of passing it; yet her sufferings in "this particular were not so great as to induce her to consult "her accoucheur on the subject. She neither at this time, nor "at any earlier period of her pregnancy, experienced a total "suppression of urine, nor does she recollect ever having re- "tained it long enough to occasion any considerable incon- "venience." (p. 28.) In Mrs. F——'s case there is a distinct point of time marked for the commencement of her disease. "When about *five months* advanced in her pregnancy, she was "much terrified and affected on hearing of the sudden death of "her aunt; which, as she herself expressed it, *seemed to turn* "*her whole inside upside down.*" Whether the feelings of Mrs. F—— were, or were not, sufficient to determine that then the altered position of the uterus took place, does not seem of much weight; for it is evident, from the history, that it had not been preceded by the unvarying symptoms of the first variety of retroverted uterus. In the case related from *Nicholas Patuna*, the patient, "about six weeks after concep- "tion, was attacked with violent pains in the lower belly, and "was unable to pass her urine, except when lying on her back. "From this time, till she entered the ninth month of her preg- "nancy she suffered much at various times, from pains in the "belly, and loins, and other complaints." These symptoms, though they show the existence of some morbid change, are certainly no evidence that this change was the first variety of retroverted uterus. Mr. Kelson's case, related in the 11th volume of this journal, was, in the first instance, unequivocally the retroverted uterus of early pregnancy. It was cured by the usual method (a daily introduction of the catheter); and about the 12th week, the impediment to the flow of urine being removed, *the uterus took pretty much its natural situation.* (p. 52.) After this, it appears that the second variety of re- troversion took place; but at what period was never determin- ed; nor was it demonstrated that this wrong position of the womb did exist, until after the usual period of gestation had

elapsed, when the indications of labour enabled Mr. Kelson to ascertain "that the child was plainly to be felt through the "vagina, that the uterus was not enlarged, but forced upwards "and forward, and the *os tincæ quite closed.*"

Under every point in which we have viewed this statement, a conviction has arisen, that the variety of retroverted uterus, occuring in the latter months of pregnancy, has no dependence on, or connexion with that which appears in the early period; that is, before the fourth month of utero-gestation. With this impression, we regret that the disease which Dr. Merriman has so accurately traced, and from which he has deduced a conclusion greatly interesting to science, should have received the name of *retroverted uterus.* This we regret because it wants precision—because it confuses it with a disease already well known, and with which, we believe, it has no connexion —and because it may, in some instances of the true retroverted uterus, lead to a fatal procrastination.

We entreat that Dr. Merriman will consider that these observations are not made with the intent to depreciate his ingenious dissertation, but in the spirit of scientific investigation, and with the ardent desire to elicit truth.

To whatever degree we may dissent from the opinion, that the deranged position of the womb sometimes met with in the latter months of pregnancy, is a continuation or termination of a case, so fully known under the term RETROVERSION:—or how much soever we may object to the application of the same name to two distinct diseases, we readily admit that the subject has been greatly elucidated by our author; and we believe the following conclusions to be formed on the solid ground of fact and fair reasoning.

Whenever that peculiar state of the uterus which Dr. Merriman denominates retroversion, and which he describes as a continuance of the retroversion of early pregnancy does take place, it may be expected to terminate in one of the following ways.

1st. "The good form of the pelvis, the health and strength "of the mother, and the efficacy and continuance of the pains, "may all combine to replace the uterus, and produce a favour- "able issue.

2dly. "The want of some, or all, of these fortunate circum-"stances, or injudicious management under the labour, may "occasion the woman to fall a victim to this untoward position "of the womb, in the course of a few days, either by a rup-"ture of the uterus producing speedy death, or by an active "inflammation or mortification of the parts.

3dly. "The uterus being unable to extricate itself out of the "awkward position into which it is thrown, may passively "submit to the burthen, till by the slow process of ulceration, "the fœtus may be excluded through the rectum or vagina, and "the mother remain alive."

In the preceding part of the dissertation, the observations and facts have been principally employed in elucidating that favourable termination of the disease, which occurs when, from the good form of the pelvis and other circumstances in the patient, the womb is restored to its natural position, and the fœtus is extruded by the proper uterine action. The remaining part enters on a disquisition extremely curious and interesting.

The frequent recurrence in the records of medicine of histories of *extra-uterine gestation* would, it might be presumed, have rendered the fact, great as the violation of a law of nature is, sufficiently distinct and tangible. The investigation to which Dr. Merriman has subjected these histories, has demonstrated, however, that some of them must come under a very different class; while over the remainder is spread a degree of doubt that renders their character equivocal.

"Mr. Kelson, Mr. Colman, and Mr. Mainwaring, have all "denominated their communications,* cases of *extra-uterine* "*fœtus*. If by this is merely meant that the fœtus, after being "brought to maturity, or nearly so, in the uterus, was excluded "from thence into the cavity of the abdomen, either by a rup-"ture of the uterus, or by an ulcerated opening through its "parietes; and afterwards, by the same process, discharged "through the rectum or vagina, I completely accord in the "same opinion; but if, as I understand, it is supposed that "these fœtuses were actually nourished, and brought to per-

* Cases given in Dr. Merriman's dissertation from the Medical and Physical Journal, (vols. 2 and 11,) and from the 2d volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge.

"fection in the cavity of the abdomen, unconnected with, and "perfectly distinct from, that system of vessels which have "been expressly set apart by nature for this purpose, I must "confess myself not at all convinced by these cases of the ex- "istence of a fact, so completely at variance with all we know "of the laws of nature, and of the animal economy. I mean "not to deny," he adds, "that fœtuses have been found in the "cavity of the abdomen, entirely disengaged from the uterus "and its appendages; but I think that in such instances a *rup-* "*ture* of the womb, of the tube, or ovarium, or an ulceration "through their parietes, had permitted the escape of a full "grown fœtus, and not that the conception had advanced to ma- "turity in a part apparently so ill adapted to such a purpose. "Every one of the instances of *extra-uterine gestation* which I "have had an opportunity of perusing, has been deficient in "some of the particulars, or symptoms, which are necessary "for confirming the fact, of a fœtus being nourished in a cavity, "and by vessels intended for other purposes, and distinct from "the uterine system; and at the same time the case was capable "of being explained in a more rational way."

Dr. Merriman examines, with much acumen, several cases which have been considered by their authors as extra-uterine; and shows, with great force of probability, that they have arisen from a rupture or ulceration of the uterus, consequent to that altered position which he has denominated *retroversion.* We are able to add to the catalogue a well marked history, where the fœtus escaped from the tube, passed by the medium of ulceration into the rectum, and was expelled, *per anum;* and where the uterus had also taken the position which is considered to give rise to such cases. It occurred to Mr. Giffard the surgeon, and was published in 1730, in the Phil. Trans. vol. 36. p. 435.

"I was sent for about the middle of August," says Mr. Giffard, "to a woman who then judged herself to be between "three and four months gone with child: she had all the symp- "toms preceding a miscarriage, and upon touching I found the "*os tincæ* somewhat dilated and spread, and from whence I "concluded miscarriage would ensue; but I was some time "after informed, that although she before believed that she had

"miscarried, that she now thought herself quick; as feeling "somewhat to move within her, agreeable to what she had per- "ceived after former quickenings. Thus it passed on for about "six or seven weeks; in which time she grew much bigger, "and the motion more perceptible; so that there remained no "doubt of her being with child. On the third of October she "was seized with violent pains in her belly and back; which "daily increasing, I saw her on the sixth, and found her la- "bouring under very great pains, and other complaints like "those preceding miscarriage or delivery. To be better satis- "fied, I passed up two fingers into the vagina, to examine by "the touch, whether the *os tincæ* began to open. *I there felt "a large and unusual fulness and tension, which I then judged "to be the body of the uterus sunk low in the vagina, and much "distending it, and extending backwards, and pressing against "the rectum, so that the excrements could not pass, neither "could she, from its pressure upon the neck of the bladder, freely "make water. I could not find the os tincæ, although I very "carefully examined; wherefore I then judged that the fundus "uteri must have receded from its natural position, and be bent "backward toward the rectum: in which opinion I was the "more strengthened, from the fulness I had observed stretching "backward; and therefore concluded that the* os tincæ *must be "very forward: wherefore I endeavoured to pass my fingers "between the os pubis and the fulness which pressed against the "upper edge of the said bone. This with some difficulty I effect- "ed, and at length, about two or three inches above the said "bone, I felt the* os tincæ *with the ends of my fingers.* The "cause of this situation will more clearly appear in the pursuit "of this account. I ordered her anodyne and quieting medicines "to relieve her pain, which she was obliged to repeat every "twelve hours; and sometimes clysters. Thus matters continu- "ed to the 20th of the said month, only that for some days "before, a water tinged with blood came away, as she imagin- "ed, through the *anus.*

"On the 20th her husband came to me, with an account that "the midwife had brought away a fœtus, but could not com- "plete her business. The midwife informed me that a fœtus "was protruded through the anus; and to confirm it, desired

"me to examine, which I did, and found the *funis umbilicalis* "hanging out about three inches beyond the anus, and passing "up through the same. I passed my fingers by the string into "the anus; where I found, about three inches up, an opening "as I then judged, into the uterus, wide enough to admit the "ends of three or four fingers, and the *funis* passing into it; "from whence I was assured that the fœtus came out that way. "The septum between the anus and vagina was entirely whole. "From these appearances I then concluded that a mortification "must have begun in the uterus; and, from its contiguity, been "communicated to the rectum; so that nature, endeavouring to "expel what was contained, and forcing it against this part al- "ready mortified, produced this opening, and the protrusion of "the fœtus through it into the *rectum*.

"There was a large discharge of grumous blood and other "substances through the anus, which continued until the 26th, "when the woman died. The fœtus was perfect in all its parts, "but wasted from its being some time dead."

Mr. *Nourse*, then one of the Surgeons of Bartholomew Hospital, examined the body, and has given an explicit dissection, with drawings of the morbid parts.

The *vagina*, *uterus*, *ligamenta rotunda*, *left ovarium*, *fallopian tube*, and *ligamentum latum* on that side, together with the hypogastric and spermatic vessels of the same side, were in a natural state. The *fallopian tube* on the right side, being traced from the *fundus uteri* almost to the *morsus diaboli*, was found confusedly uniting with, and opening into the *sacculus*, hereafter to be described. The *ovarium* on this side, with the *ligamentum latum*, was dilated into a large *sacculus** of an irregular form; extending behind the *uterus*, to the posterior parietes of which it adhered, and passing on toward the left, was connected to that part of the *colon* that terminates in the *rectum*, and to the *rectum itself*.

In all its circumstances this case has considerable precision; the exact nature of it is verified by dissection, and the annex-

* In this *sacculus* was contained the fœtus, and on the dissection were found in it the placenta and several lacerated membranes; and from it there was a large opening into the *rectum*.

ed plate, in the volume referred to, renders the whole history very clear.

We cannot close our view of this valuable "Dissertation" better, perhaps, than by quoting from it the practical remarks which the author makes on the management of those heretofore mysterious and mistaken cases.

"Dr. Hall, in his elaborate defence of the Cæsarean opera-
"tion, considering all those cases as extra-uterine, recom-
"mends to cut through the back part of the vagina, and to
"bring the child through the os externum; and the same ope-
"ration has been recommended by Dr. Mackenzie and Dr.
"Kelly. There is a case quoted by Dr. Hall, which happened
"to M. Lauverjat, in which the child was extracted by an
"incision into the uterus by the vagina. There is a great want
"of accuracy in describing the situation of the womb; but I
"can only conceive of it, that it was in a retroverted state;
"and that the incision was made through the posterior part of
"the vagina into the uterus. Unless this were the position, I
"see no reason that there could be for operating at all. Une
"femme enceinte pour la première fois, et parvenue au mo-
"ment d'accoucher, éprouvoit des douleurs si vives, que Lau-
"verjat voulut s'assurer de l'état des choses. Il fut surpris de
"trouver la vulve occupée par un corps qui la remplissoit, et
"la depassoit, et qui cédoit à l'impulsion des doigts, excepté
"dans le tems des douleurs. En parcourant cette tumeur, il
"ne trouva à la circonference qu'un cul-de-sac de demipouce
"de profondeur, sans overture, qui peut permettre la sortie de
"l'enfant. Des conferes mandés pour ce cas extraordinaire,
"voulurent voir aussi comment les choses se passoient. Ils
"trouvèrent sur la tumeur, une dechireure qui interessoit
"q'une partie de l'épaisseur de ses parois. Cette dechireure
"leur parut le lieu, où il falloit inciser. L'operation faite, le
"doigt entra dans la poche dans laquelle l'enfant étoit con-
"tenu. Il sortit beaucoup d'eau bourbeuse. L'enfant se pre-
"senta et franchit l'ouverture, qui venoit d'être pratiquée, et
"à laquelle il se fit une petite dilaceration du coté droit.
"Lauverjat ayant porté la main dans la poche, ne trouva
"aucune trace de col ni d'orifice. Du reste il ne survint point
"d'accident, et les écoulmens se firent à travers l'ouverture,

" qui se ferma par degrés. Deux mois après, le col et l'orifice " de la matrice etoient dans leur état naturel. (*Sabatier de la* " *Medicine Operatoire*, tom. i. p. 816.) The event of this case " would, doubtless, under some circumstances, justify an ope- " ration; but considering the possibility, not to say probability, " of all such cases being retroversions of the uterus, and " having the knowledge of two which terminated so favoura- " bly from the sole efforts of nature, as Mrs. Walker and " Mrs. F——s, it is impossible that I can recommend an ope- " ration, especially at the commencement of the pains, and " while the strength, habit of body, and general health of the " patient are uninjured. So long as these circumstances re- " main propitious, there is great reason to expect that the " pains alone may be able to rectify what is amiss, and to " effect the delivery *per vias naturales*. The observation of " Cicero, *Naturæ solertiam, nulla ars, nulla manus, nemo opifex* " *consequi potest imitando*, should, as far as possible, be our " guide in the practice of midwifery; in which we find that " women are seldom injured by a long continuance of labour " pains, provided their spirits are not hurried, nor their blood " inflamed, by injudicious attempts to give assistance, and by " the improper use of cordials and stimulants.

" If, however, nature gives up the point, if it is found that " the pains are unequal to the task of restoring the uterus to " its place, and accomplishing the delivery of the woman, it " remains to be considered, whether it is not more to the ad- " vantage of the patient, that such an operation should be per- " formed, and that she should by this means be released from " her burthen, than that she should continue in the deplorable " condition, which attends the slow process of discharging " a fœtus through an ulcerated opening in the vagina or rec- " tum; in which process there must always be great pain and " suffering for many months; and in which, though several " women have passed happily through it, yet others have " perished miserably, exhausted with pain and debility.

" A justification of such an operation may doubtless be " found, and perhaps it may, in some rare instances, be ad- " visable; but we know, from woful experience, that inci- " sions into the uterus have been so very generally fatal, (in

" this country in particular) that the experiment ought never " to be tried, while any reasonable expectation can be indulged " of saving the patient by any other means."

Observations on some of the Principal Diseases of the Rectum and Anus, particularly Stricture of the Rectum, the Hemorrhoidal Excrescence, and the Fistula in Ano. By Thomas Copeland, Fellow of the College of Surgeons, and Assistant Surgeon to the Westminster General Dispensary, 8vo. *London*, 1810. *pp.* 100. *Callow.*

From the Medical and Physical Journal, for November 1810.

Mr. Copeland opens this very interesting subject on the Art and Practice of Surgery, with a sensible and modest preface, introducing the observations in an order perspicuous and methodical, without calling away the attention by any inducement from the valuable information given in the whole of this work. The contents are useful, true and important. They will furnish the practitioner with such arguments for treating the disease, of which this pamphlet is the object, that the impression derived from it must give a strong confidence in practice to him who is fortunate enough to study, digest, and embrace it. Whatever is advanced by Mr. Copeland, the reader will find supported by other authors; and whatever is opposed, will be seen to be a difference in opinion, by which the reader has the choice of forming his own judgment. The selections are arranged in the very manner of the most respectable of the ancient writers, either to corroborate the author's own sentiment, or to show his variation from their text. We hail the time, and congratulate surgeons upon the event, that in this pamphlet we see not only ancient, but living authors, quoted with all becoming respect; we see also in this work the scholar of industry, to whom the languages of the different authors he has referred to are open to his research.

Mr. Copeland has divided this important work into sections. The first of which is, " *Observations on the Stricture of the Rectum.*",

The rectum is here considered by Mr. Copeland, like any

other part, subject to the consequences of inflammation, and the case aggravated from the action which that intestine is every day compelled to perform in the expulsion of the fæces. He supposes that obstinate cases of Ileus, and other chronic bowel complaints which resist treatment, have their origin in organic obstruction of the canal of the large intestines. He cites, in confirmation of this, authorities of the highest fame. He proceeds to state that strictures are not usually detected early in these complaints, and frequently not discovered till after death: hence, they have been deemed to be fatal, though the fatality was in the want of discovering them. After Mr. Copeland has given us the benefit of the opinions of most ancient authors, and after he has paid that high tribute to Ruysch which we forbear to quote, he proceeds to inform us of that of the moderns. Dr. Sherwin and Dessault are intitled to high notice for what they have imparted on this subject. And when he has thus disposed of the authors to whom he has referred, he concludes with this summary.

"But though those who are afflicted with this disease are sometimes quickly carried off with symptoms resembling those of ileus, this is not the most usual form of the complaint, for it commonly assumes a more chronic character. It attacks people of both sexes, and of almost all ages; but is most common about the middle age, and I think, as far as my experience goes, that women are more frequently affected than men.* The first symptom of the disease is an habitual costiveness; but this is so frequent an occurrence, and produced in so many ways, that it is not likely that the cause should be sought for in an organic affection of the rectum; mild purgatives are resorted to, and the symptom being relieved, the cause is no longer sought after.

* The cases which Mons. Derreçagaix relates in Dessault's journal, are principally women, and the most aged is only forty-six years old. Mr. White, in a paper in the London Medical and Physical Journal, Oct. 1809, remarks, that this disease is most common at the decline of life; but his own experience does not bear him out in the assertion, for of eight cases which he gives, six are under fifty years of age. Mr. White considers the disease as necessarily fatal, but he does not seem to have heard of Mons. Dessault's paper.

"When this has subsisted for some time the patient complains of what is called piles, and what is often really so, as a consequence of obstructed circulation in the parts. The remedies usually given in such cases are applied, sometimes with relief, but more frequently otherwise; and then the good old maxim of the inexpediency of curing piles, perhaps rescues the practitioner from the discredit of failing to relieve his patient. The piles are sometimes removed by ligature, or excision, and this gives a temporary abatement of the most painful symptoms, while the cause of the disease is still unknown.

"In a short time, as the gut continues to decrease in diameter, the efforts to expel the fæces become more violent, and the consequent progress of the disease more rapid. The stools, which have been long evacuated with difficulty, become contracted in size, appearing like earth-worms in their form, or small pellets. In this stage it is sometimes, in the male, mistaken for enlarged prostate gland, but if the finger be introduced into the rectum, the gut will be found either obstructed with small tubercles;* or intersected with membranous filaments;† or else the introduction of the finger will be opposed by a hard ring of a cartilaginous feel, composed of the diseased inner membrane of the intestine,‡ instead of that regular tumor on the anterior part of the rectum, which is formed by an enlargement of the prostate gland. As the disease advances, the fæces become more fluid, and there is a thin sanious discharge from the anus, accompanied with tenesmus; not however the painful tenesmus of dysentery,§ but with less distress and less irritation of the parts than in that disease.

"During this time the constitution suffers so little, that the patient might be supposed, from appearance, to enjoy full health. But the ravages of the disease now begin to be felt in their effect on the general habit. Frequent eructations of air

* Dessault loc. citat.

† Bonetus loc. citat. Case 5 in this book.

‡ Morgagni, annulo quasi quodam constringi videretur digitus, loc. citato. Adeo induratum ut anceps hærerem an carnosum an cartilaginosum esset dicendum. Ruysch, t. iv. obs. 95.

§ Sherwin.

confined in the intestines, added to the other symptoms, torment the patient, and render his life miserable. This symptom is so constant, that if it did not occur also in affections of the kidneys and other complaints, it might be regarded as pathognomonic; but I think it prevails to a greater degree in this than in any other disease.

"At this period abscesses very frequently form in the neighbourhood of the anus, and sometimes break into the vagina in the female, and the fæces are discharged through the fistulous orifice. In the male, an adhesion takes place with the bladder, and the abscess* discharges itself with the urine, and sometimes fæces and wind are voided by the urethra. But more frequently the matter makes its way through the nates, as in cases of common fistula, for which disease it is not unfrequently treated.

"The patient often continues a long time in this distressing situation, for none of the vital organs are affected, till, at last, worn out with the pain and the discharge, or perhaps the total obliteration of the rectum, he yields to his fate. This is usually the progress and issue of the disease, when it is not early discovered, and I must confess also, sometimes the termination when it is; that is, when the parts are attacked with cancerous ulceration. But I believe that, when the cause of the complaint is ascertained in its early stage, the resources of the healing art are sufficient very materially to relieve, and often to cure it altogether; subject, however, like strictures in the urethra, to the necessity of now and then passing a bougie for a considerable time after the symptoms are removed.

"† The rapid progress of disease, from a very trivial origin, in parts subject to continual motion, is very remarkable, in many instances, besides that one under consideration; for this reason, a simple wound near the organs of deglutition is

* Petit Œuvres Posthum. tom. ii. p. 93, the contrary also occasionally takes place, and urinary calculi are voided by the rectum. See Paulus Æginetæ, and Memoirs of the Medical Society, vol. iii. 496, 542.

† See some very important observations on this subject in Mons. David's Memoir on the Effects of Motion and Rest, translated by Justamond. Also, Mons. Bazille sur les Effets des contre Coups en divers parties du Corps. Prix de l'Academie de Chirurgie, tom. iv. quarto.

so difficult to heal; for this reason perhaps it is that pulmonary consumption is so fatal a complaint, for the parts being necessarily in constant motion, have not the opportunity afforded them of recovering from an attack of disease."

The second Section is, "*On the Causes and different Kinds of Strictures of the Rectum.*"

In the treatment of this, as in the former section, he refers back into the researches of the ancients; establishes his foundation upon this classic ground, and adroitly concludes in the following manner:

"First, it may be remarked, that we meet with no description of the disease, in any author that I can find, before the time of Wiseman; and the accuracy of the ancient writers of surgery, in their history of diseases, is universally allowed, whatever may be said of some of their modes of cure. It may therefore, I think, be fairly inferred, that either the complaint did not occur so frequently formerly, or that it was overlooked by physicians and surgeons, who suffered scarce any thing which related to diseases altogether to escape them. The case in Wiseman, indeed, was the consequence of the operation for the fistula in ano, as it was then performed; but, I believe, he was the first who has described any species of the disease, and he treated it in a way that was well worthy of the imitation of his successors, if they had sufficiently considered it: but I shall say more of this when I come to the treatment of the disease.

"Soon after Wiseman, as I have related, many authors have described the disease, and they all concur in considering it as inevitably fatal, until Mons. Petit* gives a hint, that when it was a venereal symptom, it was curable, by the usual remedies for that disease; but that in other cases he had never seen it relieved.

"Dessault saw it so frequently in combination with other symptoms, decidedly venereal, that he did not hesitate at once to put his patients under a course of mercury, and with a success that fully warrants us in considering it as, very frequently, a symptom of the venereal disease. He did not, however, trust

* Loco Citato.

solely to the effects of this remedy for a cure, for he saw that the particular functions and morbid alteration of the part, required a particular local treatment, independent of the medicine which was to cure the constitutional disease. He therefore, during the exhibition of mercury, every day introduced into the rectum tents imbued with some ointment, of a greater or less size, and for longer or shorter time, according to the circumstances of the case, and by this combined local and constitutional treatment generally cured his patient.

" Mons. Dessault does not seem, indeed, to consider the tent of so much importance in itself, but only as the vehicle of his medicaments. Be this as it will, however, he relieved his patients of a disease, which, till then, was generally considered as a fatal one.

" It should be remarked, that he ascribes the complaint to many other causes, besides the venereal disease, as to rheumatism, to gout, to cutaneous complaints; but notwithstanding this, he gave mercury, and mercury relieved them. Richerand* also, in his Nosographie Chirurgicale, considers the stricture of the rectum as sometimes arising from the venereal disease.

" If the relief of a complaint by mercury (added to the use of the tent or bougie,) which is often accompanied by less equivocal symptoms of the venereal disease, and which has been considered as constantly fatal, be not thought sufficient to establish its syphilitic origin and nature, this opinion may, perhaps, derive some additional strength, when we reflect how often the neighbouring parts are attacked with complaints, of which no practitioner doubts the venereal origin.

" The condylomatous excrescences, which we see every day surrounding the anus; the large rhagades in these parts, though not so frequent a disease, are known to be venereal. And these, also, in addition to the constitutional remedy, require a local treatment adapted to their nature, as well as the stricture

* Le retrecissement de l'extremite inferieure du rectum est quelquefois un vice de conformation; mais plus souvent l'effet de l'epaississment veneriunne de ses parois, de tous les symptoms de l'affection syphilitique il n'en est point de plus grave. Nosographie Chirurgicale, Paris, 1808, tom. iii. p. 418.

of the rectum. Even the fistula in ano is sometimes the consequence of the venereal infection,* as has been remarked by Mr. Pott and Le Dran.

"After all, I do not by any means intend to assert, that it is always, or even most frequently, a symptom of the venereal disease. If it is met with in combination with other syphilitic complaints, there can be no doubt of the propriety of using mercury. And if it is relieved, in such cases, by mercury, added to the use of the bougie or tent, I think it is reasonable to employ, and to expect benefit from, the same means in other cases, where it may be the solitary symptom, and where we are disappointed in our methods of cure."

The Treatment of the Stricture of the Rectum, is the subject of the third Section.

"It has frequently been remarked (says Mr. Copeland) that he who knows a disease cannot be much at a loss how to treat it; and although this may not be true, perhaps, in its fullest extent, I believe no one will dispute, that the art of curing diseases advances, in some sort of proportion to the increase of our pathological knowledge." From this commencement in the treatment, Mr. C. proceeds, grounding all his observations and practical science on the comparative treatment of former authors, and their elucidations of the disease. After having advanced thus progressively, in stating what has been done by others, and weighing in his own judgment what the result upon the whole should be, he closes the subject with the following aphorisms, and thus concludes the third section.

"Before I quit this subject, it may not be unuseful shortly to recapitulate some of the most important circumstances of the disease and its treatment.

"First, That a stricture of the rectum is by no means so uncommon a disease as is usually imagined, and that it has been hitherto generally considered as necessarily fatal, because it has been discovered only in the last stages, or by dissection after death.†

* Pott's Works, by Earle, vol. iii. p. 87. Le Dran, Observ. de Chirurg. tom. ii. obs. 84.

† See some observations on the diseased appearances of the rectum, by Dr. Baillie. Morbid Anatomy, page 111.

"Secondly, That many of those obstinate cases of constipated bowels, which are of long duration, arise from an organic obstruction to the passage of the fæces, and that this obstruction is most frequently so situated as to be within the reach of surgical aid.

"Thirdly, That it is requisite, in such cases, to examine the anus with the finger, or if the symptoms be strongly marked, and there be no obstruction within the reach of the finger, to examine it with a rectum bougie.

"Fourthly, That the use of internal medicines alone will be unavailing in such cases, and that nothing without the use of the bougie affords any hope of relief to the patient.

"Fifthly, That the disease is much less frequently of a cancerous nature, than from the description of authors it may seem to be.

"Sixthly, That it is often combined with symptoms of the venereal disease, and, in such cases, is more readily relieved by mercury, added to the use of the bougie, than by any other means.

"Seventhly, That if the disease is often found in combination with syphilitic symptoms, it is fair to infer that it may, in some cases, also, be the solitary symptom, and that if it resist the local treatment, and there be reason to suspect venereal mischief in the habit, it is right to try the effect of the mercury at the same time.

"Lastly, That whatever be the nature of the disease, provided it be not true cancer, it is necessary to continue the use of the bougie, at intervals, for a considerable time after the free passage of the fæces has been established, and to return to it whenever there be any symptoms of a recurrence of the complaint."

The Fourth Section treats on the Hemorrhoidal Excrescence."

Mr. Copeland very candidly states, that the subject of this section has been so very accurately described, and distinguished from other complaints, which it sometimes resembles, by sir James Earle and some others; and is a disease so well known to surgeons, that it becomes unnecessary to enter into a minute detail of its nature and appearances. But he adds, that he who has no other opportunity of informing himself on this subject,

than what is afforded him by the English writers, who have treated or touched on it, will be apt to conclude that the extirpation of such excrescences, either by ligature or excision, is always a safe and successful operation. Sir James Earle has powerfully urged, in his edition of the works of the immortal Percival Pott, the removal of them by ligature, and his cases were successful. And other surgeons have recommended excision, in cases of which the treatment has been also successful. But Mr. Copeland has found from practice, that the operations by ligature and excision in some cases have proved fatal. He has not relied upon his own bare assertion for the verification of these facts; but has applied his knowledge and his reading to the establishment of his own opinion by that of others. *Petit* has related cases, where the plausibility of success *a priori* was the most promising, and where by ligature, the patients died. From such instances, in similar cases, if there be any system adopted for removing these obnoxious and vexatious excrescences without a chance of incurring such unexpected and dangerous consequences, certainly Mr. Copeland has done well, and given us a lively instance of the value of that activity of mind, which was thus awake to so laudable a duty. If ligature and excision be sometimes from an unforeseen state of the constitution of a patient liable to produce fatal consequences, surely that method which does not expose a patient to the same danger, is and must be acknowledged to be an improvement. And here an opportunity is given to remark, that Mr. Copeland has displayed a great deal of that fire of genius which, when cultivated, must give us some idea of the character of what we expect from a true surgeon.

Mr. Copeland has a just apprehension of the hazards that are incurred both by excision and ligature in these cases; and points out a middle course which promises to avoid the danger of both; in which he is sanctioned by the authority of Hippocrates.

"Among the various modes of extirpating the tumors, which are suggested or recommended by Hippocrates, who has described the disease and its cure almost as well as any of his successors, that of taking them off (I suppose pinching them off, ἀφιλεῖν auferre,) with the fingers, deserves to be men-

tioned as a sort of medium between the ligature and the excision, comprehending, in cases where it is practicable, most of the advantages of each without the dangers of either. This rude operation of Hippocrates, (which he says may be done without telling the patient any thing of the matter,) or at least the essential principle of it, namely, of producing some kind of contusion at the time of removing the excrescence, is worthy of consideration. It is a well known fact, that the instinct of animals, directs them to bite off the umbilical chord, when they produce their young. The laceration which the parts suffer in this natural operation prevents all hemorrhage from the chord. The life of the young is thus preserved, until the circulation is accommodated to that alteration which is necessary after birth, when the fœtus becomes a perfect and respiring animal."

Among other remedies to which Mr. Copeland has called our attention, is the frequent injection of cold water up the rectum, with the addition of a few grains of sulphate of zinc, as employed by Schmucker. He likewise relies much upon the application of bougies in this complaint, as practised by Monteggio, an eminent Italian surgeon.

Though the works of Hippocrates are open to every surgeon, yet the merit of bringing into notice a fact from this father of the art, has been left to Mr. Copeland; a fact that will probably supersede the employment of excision or ligature.

We think, and it is but barely a presumption, if our author had pointed out that the common forceps, sharply dentated, would be the properest instrument to embrace the stem of the hemorrhoid, so that by the lacerating action of it, any hemorrhage would be prevented, that the direction would have been useful. And as to ligature, none being made, no consequence from it could follow. The forceps should be applied to bring forward the hemorrhoid, and on its division, all which is left within the gripe of the forceps will be sufficiently lacerated to stop all herrmohage.

The fifth section treats of *Fistula in Ano*. The author very justly observes in a note, page 58:

"It is remarkable, that a disease of so frequent occurrence shoud have excited so little of the attention of the English sur-

gical writers. Fewer cases of the disease have been published, and fewer remarks on the infortunia and the anomalous circumstances attending it during the progress of the cure, than almost any other disease. Except the classical treatise of Mr. Pott, who has by no means exhausted the subject, there has hardly any thing appeared on this subject for the last century."

The point of this section goes chiefly to two circumstances, which render the operation of *Fistula in Ano* more complex and uncertain in its event. From the hemorrhage which sometimes follows; and from the cause of the disease sometimes being too remote to be removed by the operation. The hemorrhage has been known to be fatal. The stricture in the rectum with a morbid state of the inner membrane of the gut, is far from being less frequently fatal; and where this is the case, the fistula becomes only a symptom, or consequence of the original disease.

Our author says, " the degree of inconvenience, therefore, which the fistula produces, and the other circumstances of the more important disease, are to be taken into consideration before the operation be resolved on, in cases of this description.

And here also Mr. Copeland appeals to authorities which support his well intentioned improvement.

The latent sinuses, which are to be found in the complex cases of fistula in ano, have not been amply treated on. A dependence on the excellent direction of Mr. Pott has given a confidence to the operative surgeon which makes him blind to any farther inquiry; but it must be remembered that the operation can do no more than relieve the cause within its scope; and that the operation is not the less valuable from not doing more than what Mr. Pott even intended it should do.

The remaining section consists of well narrated Cases, illustrative of the author's observations on the several diseases of which he treats. In conclusion, we may venture to recommend this work to the profession, as containing the most correct and clear account of a class of diseases often obscure, and too frequently neglected.

ORIGINAL PAPERS.

On the use of the Vaccine Crust or Scab.

I HAVE observed, with much concern, the difficulties attendant on vaccination for want of a continued supply of the vaccine virus, and therefore offer the following remarks on the most easy and effectual mode of communicating the infection at all seasons of the year.

On the use of the crust or scab in Vaccination.

When the wonderful discovery of vaccination was first made known by doctor Jenner, so desirous were physicians of proceeding with safety in this untrodden path, that they generally adopted the doctor's directions in using the limpid fluid taken from the vesicle, on the eighth day before the areola was formed. The danger of using the purulent matter secreted round the vesicle in the after stage of the process, appeared to be a sufficient reason for this cautious mode of procedure. But the difficulty of procuring vaccine virus in thus following doctor Jenner's prudent advice, operated as a real discouragement to the practice of vaccination. When the season for performing it arrived, the inquiries for the virus were anxiously made, and it was often necessary to procure it from a distance before the business could commence. We are now happily relieved from these embarrassments, for, in the year 1802, James Bryce of Edinburgh, surgeon to the vaccine institution of that place, published an account of his experience in using the scab in which the vesicle terminated—and this is justly considered as one of the greatest improvements on doctor Jenner's valuable discovery, as it furnishes us with a most certain mean of communicating the vaccine virus, and one which affords it at all times of the year.

The most perfect vesicles which go on to the state of crust or scab, without any deviation from the proper character; and which, when they fall off are somewhat transparent, smooth, of a mahogany color, and rather brittle than tenacious in their texture, are to be chosen to propagate the infection. Great care

is requisite to ascertain that it is really the vaccine crust or scab formed from the vesicle, which first falls off, as another scab of a different nature will often quickly form on the part. The scab should be wrapt up in a clean linen rag or white paper, and kept in a cool dry place. When used, the margin, which is of a lighter color, should be removed with a knife; and a portion of the remaining dark, hard, internal part is to be shaved off, reduced to powder on a piece of glass, and moistened with a small quantity of cold water, mixing it well together and then introducing it in the arm on the point of a lancet, leaving also a small portion of the scab on the scratched part. No more of the scab must be moistened at one time, than what is used, and no greater portion should be shaved off from the scab than what is wanted for the present occasion, as it appears to retain its strength better by continuing in the undetached state. It is believed that the livid vesicle, and especially the unopened one, is the most powerful.

By attending to the above directions I have lately vaccinated, from different scabs, twenty persons in succession, without a failure, on the first attempt. The frequent applications I have received, for vaccine virus, from many parts of the United States, occasion the present attempt to diffuse the knowledge of this easy and effectual mode of preserving it for use at all seasons of the year. The oldest scab I have ever used with success was one which I had possessed for eleven months. It is my present practice to vaccinate in every month of the year, and to use the scab only for this purpose.

It does not appear, by the European medical publications, that the vaccine scab is there much employed, but it is reasonable to hope that so certain and easy a mode of communicating the infection will soon come into general use.

SAMUEL P. GRIFFITTS.

Philadelphia, 3d mo. 9th, 1811.

Account of a Fever which prevailed among the Indians on the Island of Nantucket, in 1763-4.

BY JOSEPH PARRISH, M. D.

HAVING passed several days on the island of Nantucket in the summer of 1805, it afforded me an opportunity of making many inquiries respecting the epidemic fever which swept away almost two thirds of the Indians.

For the information on which the present narrative is founded, I am particularly indebted to Richard Mitchell an ancient and very respectable friend; who was one of the selectmen at the time of the calamity, also to the relatives of Zaccheus Macey (deceased), who obligingly permitted me to examine his manuscripts on the subject.

The disease was a very malignant typhus or ship fever, and appears to have been introduced in the following manner.

A snow arrived off the bar of Nantucket, having a number of passengers from Ireland. The first intelligence of any sick being in the vessel, was brought by several persons who came from an adjacent island, and reported that they saw two dead bodies floating on the sea. The selectmen were alarmed lest they should have the smallpox on board, and deputized several of the inhabitants who had passed through that disease to go and ascertain the fact; they returned with information that it was yellow fever.

The selectmen issued orders to the captain, to throw no more of the dead overboard, but to bury them on the shore, and sent off spades and shovels for that purpose; and further directed that no person from the vessel should enter the town.

Soon after this, information was lodged that several persons had left the vessel, and together with their baggage were at the house of Mary Quinn an Irish woman who resided in the town. As it was late in the evening when this intelligence was received, they were not ordered off until morning. When a messenger was despatched to Mary Quinn for that purpose.

The messenger found an Indian woman at the house engaged in washing the clothes of the passengers. She resided in one of their villages, in the family of the priest. In nine or at furthest eleven days, this woman was seized with a malig-

nant fever and died. The Indian priest and all his family took it and died, as well as most of the inhabitants of the village, and thence it gradually extended its ravages over the greater part of the island; as will appear, by an annexed statement of cases taken from the manuscript of Zaccheus Macey.

The sick had scarcely any medical assistance: the physicians declined attending among them. Richard Mitchell gave me the following account of symptoms.

Pain in the head, soon followed by a yellowness in the skin and eyes. A few hours before death the color would change to livid. The face and eyes, particularly of those who died with a short illness, were swelled in a shocking manner. Hemorrhages from the nose also occurred. Few or none recovered that were delirious. Some appeared to die in consequence of suffocation induced by tumefaction about the throat. In some cases the disease proved fatal in forty-eight hours. Some who passed the eighth or ninth day recovered. Swellings about the neck, which terminated in suppuration, were favourable signs: two instances of this kind were visited by Richard Mitchell: the ulcers healed kindly. Others who survived the first shock of the disease died eventually with chronic complaints.

Eight Indians who retired to a remote part of the island and avoided all intercourse with the sick, remained free from the disease. A number more, principally boys and girls resided in the town, among the white inhabitants, they were generally exempted from the calamity, but a few instances occurred of their visiting their sick relatives, taking the disease, and dying in the houses of their masters.

But what constitutes a very extraordinary part of this melancholy history, is the fact, that all the whites were exempted from the epidemic, except Mary Quinn, who it is said, had the disease but recovered.

It commenced in the eighth month (August) 1763, and continued until the succeeding second month (February); in this respect it differed essentially from what is commonly called the yellow fever.

The number of Indians belonging to and chiefly residing in

the island of Nantucket at the time of the calamity was -	359
Of which had the disease - - - - -	259
Died - - - - - - -	223
Recovered - - - - - -	36
Lived among the sick and escaped the disease - -	34
Retired to a remote part of the island and avoided all intercourse with the sick - - -	8
Lived among the white inhabitants and escaped - -	40
Absent at sea - - - - - - - - -	18

From the same account it appears that in 1788 the number of Indians belonging to the island, was reduced to five males, and thirteen females. And the writer whose manuscripts extended as far back as 1722 records an observation, that is worthy of remembrance, viz. he never knew one of them to be deaf, but frequently blind.

Experiments on the Mineral Waters of Bath, (Bristol, Penn.)

By JAMES CUTBUSH.

Experiment

1. Litmus paper was not sensibly altered.
2. Turmeric paper remained unchanged.
3. Muriate of barytes did not produce a precipitate.
4. Acetite of lead gave a white precipitate, which, on standing, was increased.
5. Nitrate of silver produced a purple color, and, on standing, afforded a precipitate more or less colored.
6. Oxy-sulphate of silver produced a precipitate analogous to experiment 4.
7. Solution of soap remained unaltered.
8. Caustic potash gave a brown precipitate.
9. Caustic ammonia produced the same effect.
10. Carbonate of potash struck a brown color.
11. Nitrate of mercury afforded the same result as expt. 4.
12. Lime water did not produce a white precipitate, after standing some time.
13. Oxalate of potash remained unaltered.
14. Carbonate of ammonia and phosphate of soda, added one after the other, gave no precipitate.

Experiment

15. Alcohol, added to an equal quantity of the water, produced no change.
16. Alcohol of galls produced a brown color, and, on standing, gave a black precipitate.
17. Prussiate of lime produced a blue color.
18. Triple Prussiate of potash afforded the same result.
19. Succinate of ammonia produced a brown precipitate.
20. Muriate of lime was not sensibly affected.
21. Solution of arsenic produced a light brown appearance.
22. Nitric acid did not produce any visible effect.
23. On exposing a portion of the water to heat, in an evaporating dish, an ochrous deposition was formed.
24. By separating the product of expt. 23, and adding alcohol of galls to the filtered liquor, no change of color ensued.
25. Sixteen ounces of the water was evaporated to dryness; the residue was collected and weighed; it amounted to 2.25 gr.; of which 75 was muriate of soda. The remainder (1.50 gr.) was oxyd of iron.
26. A piece of polished silver immersed in the water became tarnished. This effect, however, is not apparent until after some hours.

The temperature was ascertained to be the same as other spring water.

RECAPITULATION.

The first experiment indicated the nonexistence of *uncombined* acid. Sulphuretted hydrogen, if in sufficient quantity, *and not in combination*, will also affect the color of litmus. The second experiment proved, that no alkali nor alkaline earth, if present, was in excess. That none of the sulphates, (salts formed with sulphuric acid) were held in solution, is inferred from expt. 3. Muriatic acid, however, was found to be present, from the production of muriate of lead. The fifth experiment indicated sulphuretted hydrogen, which existed in the state of combination, as will be hereafter noticed. It may be proper to remark, that the solutions of silver (the nitrate particularly) are precipitated by sulphuretted hydrogen, and by

hydro-sulphurets; but in this case, the precipitate, instead of being white, which is produced wholly by muriatic acid, is more or less of a purple or blackish color. The precipitate in this instance is soluble in dilute nitrous acid. Extractive matter has also this effect; but its presence was not detected.

The sixth experiment confirmed expt. 4th, in producing an insoluble muriate of silver.

The seventh experiment proved the nonexistence of earthy salt; if it had occurred, a turbidness would have ensued, owing to a mutual decomposition of the soap (saponule of soda) and earthy salt. If a metallic salt, such as a sulphate or muriate, had been present, a turbidness would have also taken place. Expts. 8, 9 and 10, showed the existence of metallic matter, which, by the use of other reagents was proved to be iron.

Experiment 11 confirmed expt. 4, by producing a submuriate of mercury. Expt. 12 proved, that no carbonic acid was present; if it had occurred, a white precipitate, soluble with effervescence in any of the acids, would have been formed.

Although none of the earths were detected by the reagents before mentioned, yet, in order to examine the water for lime and magnesia, the 13th and 14th experiments were instituted. These, however, were unsuccessful.

Alcohol produced no precipitate, which demonstrated, agreeably to the observations of Mr. Kirwan, and with the other reagents employed, that none of the sulphates were held in solution.

Alcohol of galls indicated the presence of iron. In consequence of the peculiar color it produced, being analogous to the phenomena which take place under similar circumstances, by which the solvent of the metal was inferred, the presence of sulphuretted hydrogen as the menstruum of the iron was proved to exist.

Experiment 17 and 18 confirmed expt. 16, by producing the Prussiate of iron; the 19th expt. also confirmed this conclusion, by affording a succinate of iron.

The 20th expt. proves, the nonexistence of uncombined alkali; the 21st the presence of sulphur, according to Westrumb;

and the 22d, that the substances present were soluble in this acid.

The 23d expt. also proves, that the solvent of the iron was a volatile, and not a fixed one; for, on the application of heat, the menstruum was carried off, and the iron deposited in the form of an oxyd.

Experiment 24 also confirms this conclusion.

The 25th expt. was instituted in order to ascertain the quantity of fixed ingredients which the water contained. Accordingly, on evaporating sixteen ounces, a residue, consisting of two and a quarter grains was left; after separating the saline matter, the remaining one and a half grains was the ferruginous oxyd.

Experiment 26th proved the presence of hepatic or sulphuretted hydrogen gas.

Considering these experiments and inferences as conclusive, as far as they have gone, it would follow, that this water is a chalybeate, (which has heretofore been proved,*) that the iron is dissolved wholly, or in part, by sulphuretted hydrogen, and that it is accompanied by an alkaline muriate, the muriate of soda.

Bath, March 25th, 1811.

Thoughts on Superfœtation.

By N. CHAPMAN, M. D.

By superfœtation, we understand in the usual acceptation of the term, a conception, or conceptions succeeding to one which has already taken place, so that the uterus contains at the same time, two or more fœtuses of very DIFFERENT AGES AND SIZES. Does superfœtation, as thus defined, ever occur in the human species?† It was once very generally thought that it did occa-

* See the experiments and observations of Dr. Rush, and Dr. de Normandie: the former in a treatise published in 1776, and the latter in the American Philosophical Transactions.

† Let me be understood. I mean where a perfectly natural organization of parts exists. Whether successive impregnations can take place in women who have a complete double set of genital organs, I will not take upon myself to decide. This is a distinct question. There are, however, some facts which

sionally happen, but the impression prevailed at a season, when in medicine, a sort of popular credulity had usurped the place of cautious investigation, and well tempered scepticism.

Discarded by the common consent of physiologists, for more than half a century, this notion has of late been revived, and has received the support of some few respectable writers. As having again become the subject of speculation, it may, perhaps, be not wholly unworthy of a brief examination.

It seems to me, that a belief in superfœtation can hardly be entertained by any one who is conversant with the human economy, and particularly with the changes which the uterine system undergoes in consequence of pregnancy. We know that soon after conception, the os tincæ, as well as the internal apertures of the fallopian tubes are closed by a deposition of a thick tenacious mucus. But to accomplish still more perfectly, an end so important to the scheme of generation as the *occlusion* of the uterus, nature resorts to another provision.

Either by the sprouting forth of minute bloodvessels, or by the effusion of a species of lymph, or out of coagulated blood,* a membrane of some firmness of texture is quickly formed. This membrane, which is called decidua, or caduca, from its being shed at the period of delivery, lines completely the uterus, and thus cooperates with the dense mucus already alluded to, in obliterating the three openings into its cavity.†

show that it is not wholly improbable. In his Opuscula Pathologica, Haller relates the case of a lady in whom was found, after death, a double uterus and vagina; and he is of opinion, that women thus formed, might be liable to a subsequent conception. Purcell gives an account in the Philosophical Transactions, of a similar case, and expresses the same conviction: and Lobstein, professor of anatomy at Strasburgh, tells us, in the London Medical Journal, that he actually delivered a woman of two children, one a month after the other, and was able to convince himself, that "this was owing to her having two uteri, to each of which there was a distinct vagina." Another instance of a lusus naturæ of this kind, is recorded by Mr. Pole, in the Memoirs of the Medical Society of London.

* "The illustrious Haller supposed, that this was formed by naked vessels shooting out from the uterus. Dr. Hunter imagined, that the arteries of the uterus poured out coagulable lymph, which was afterwards changed into decidua. His brother, Mr. John Hunter, attributed its origin to coagulated blood, which formed a pulpy substance on the inner surface of the uterus." Burns's Midwifery.

† Burns on the Gravid Uterus.

Such, too, is the enlargement of the gravid uterus, and the change thereby produced in the relative position of its appendages, that a new series of impediments arise to the frustration of a second conception.

In this state of the organ, it is accurately ascertained, that the tubes lie parallel to its sides, and subsequently in the progress of gestation become bound in the same situation, instead of running in a transverse direction towards the ovaries, with their extremities loose and fluctuating.*

Were an embryon, therefore, to be generated by any anomalous combination of circumstances, the tubes could not possibly embrace the fecundated vesicle, and the embryon, of course, must remain in the ovary, or fall into the abdomen, constituting an extra-uterine conception.

Let us, however, withdraw all the obstacles which have been enumerated to the passage of the embryon, and admit the practicability of its reaching the uterine cavity. What in this event would happen? Disorganization fatal to each fœtus must inevitably ensue.

It is to be recollected, that the uterus had prepared, in the first instance, whatever was required for the reception, the nourishment, and evolution of the fœtus. It had originally supplied it with a decidua, as a medium of attachment, and afterwards with a placenta for still more important purposes. To the second fœtus, the same offices are to be rendered. These it could not execute, without suspending the actions existing at the time, and taking on such as are necessary to the fabrication of an additional decidua and placenta.

That actions so incompatible cannot coexist, strikes me, as sufficiently obvious. Were the uterus, therefore, to attempt this new process, the result would be, the separation of the

* "Soon after impregnation takes place, the cervix uteri becomes entirely shut by a thick viscid gluten: the internal cavity is also lined by the internal membrane of the ovum, which attaches itself to the whole internal surface of the fundus uteri. (1) The fallopian tubes also become flaccid, and are as gravidity advances, supposed to be removed at such a distance that they cannot reach the ovaria to receive or convey another ovum into the uterus." Edinburgh Practice of Midwifery.

(1) The gravid uterus undoubtedly receives a membranous lining, but not exactly in the manner here described. Vid. Burns on the Gravid Uterus.

primary decidua and placenta, occasioning an abortion, accompanied with hemorrhagy, which would sweep out the whole of its contents.

It is probably, on this account, that menstruation uniformly ceases with the accession of pregnancy. I am aware, that this is a point not altogether conceded. The weight of authority is, however, decidedly against menstruation continuing during gestation. By all the very recent writers it is denied. Those who hold, or I might rather say, did hold the contrary opinion, have mistaken a hemorrhagy from the vagina, which sometimes recurs with considerable periodical regularity, for the catamenial flux. Several cases of this kind have come under my own observation, where I had an opportunity of inspecting the discharge accurately. In every instance, I found it pure coagulable blood, having neither the color, nor odor, nor any other of the peculiar properties of the genuine menstrual fluid.

By again adverting to the condition of the pregnant uterus, we shall see that a suppression of the catamenia is exactly what ought to be expected. The deciduous membrane is framed while the process of conception is proceeding in the ovary. The vessels which had secreted the catamenia are now engaged in a new operation. They form the membrane, and then support it. While thus employed, their secretory function is suspended. They cannot, at the same period, perform actions so incongruous and inconsistent. The one must yield to the other. This is very strikingly illustrated by the fact which has not been sufficiently attended to, that in a large proportion of the cases of obstinate amenorrhea, the membrana decidua exists, and that the first symptom of the return of the discharge is the coming away of the membrane. Of the identity of the two membranes, there can be no doubt. It has been determined by very competent judges.*

By one less averse than myself to speculative reasonings in matters of science, a variety of considerations of this nature, might be pressed against the hypothesis which I am combating. It could, I think, in particular, be urged with great plausibility, that changed as is the whole uterine system by ges-

* Baillie. Burns, &c.

tation, not only in the mechanical distribution, but also in the structure and functions of its parts, it cannot possibly assume that peculiar condition which seems indispensable to conception. Of all the operations of the animal economy, that of conception, undoubtedly requires the most harmoniously concerted action in the several organs by which it is com menced, carried on, and consummated. Derangements in any one portion of this complex apparatus are confessedly productive of sterility. So essential, indeed, to the generative process in the human species, is a perfect integrity in the functions of the uterine system, that by the suppression or even vitiation of the catamenia, the aptitude to conception is lost or diminished. But enough of these speculations. I am content to rest the defence of the question on the facts which I have stated. If they be correct, it results that superfœtation cannot take place in the human species.

As, however, it might not be candid to close the present discussion without noticing the arguments which have been adduced to support the opposite views of the subject, they shall now, as far as I am acquainted with them, be detailed.

The believers in superfœtation have relied, with no inconsiderable confidence, on the analogy of those animals, which admit during the season of procreation various males in succession, and produce offspring marked by the respective peculiarities of the male parents. Thus, it is affirmed, and with truth, that a bitch while in heat, will be connected with several dogs of very opposite descriptions; as the spaniel, the cur, the mastiff, the hound, the terrier, &c. and bring forth a litter of pups resembling more or less each breed.

This, though an imposing argument on the first aspect, is wholly fallacious. There is here not a case of *superfœtation*, as is imagined, but of *contemporaneous conception*. Experiments carefully made, prove incontestably, that the vesicles of the ovary in multiparous animals are ripened, and the elementary matter of each ovum transmitted simultaneously to the cavity of the uterus.

We have too, in confirmation of these experiments, the acknowledged fact, that at the time of birth, the whole brood is alike matured, having in an equal degree, the indications of fœtal completeness.

But there are other circumstances of which we must not lose sight in this investigation. The uterus of the bitch, and I presume, of all the animals which multiply in a similar mode, differs very materially from the same viscus in the human species. That of the former is divided into a number of cells or compartments, each of which may be deemed to a certain extent, an independent organ. These animals have, moreover, no deciduous membrane, and hence the ova do not become attached to the uterus for some length of time after arriving in its cavity.*

Even, therefore, were we to allow, in contradiction to positive experiments, that successive conceptions are incident to the generative process in one class of animals, the concession would be intitled to no sort of weight in deciding the question as regards the human species.

But the advocates of superfœtation have not left the vindication of the hypothesis solely to this loose, remote, and inapplicable analogy. They strenuously appeal to the cases, where two or more children of different sizes, and *seemingly of different ages*, have been born nearly at the same time, or after a longer interval. That such instances have been observed, I am not disposed to deny. They are, however, exceedingly rare, and have seldom been accurately related, or well authenticated. Few, indeed, have of late been recorded. The writers of the "olden time" abound with them; but their reports are so habitually mixed and disfigured by the extravagance of intentional falsehood, or the delusions of credulity, that it is difficult to distinguish the truth from the fiction, or to pronounce between the reality and the deception.

In a majority of the instances of reputed superfœtation, really deserving of credit, the lesser child is represented as *dead and decayed.* The explanation of such cases is too obvious to require being particularly indicated. It will at once occur to every one, that the fœtus died prematurely, and was retained in the uterus. We have, however, been sometimes told, that the diminutive child was born alive, or if dead, had all the

* "The uterus of the bitch is divided into different cells, and their ova do not attach themselves to the uterus so early as in the human subjects." Edinburgh Practice of Midwifery, &c.

appearances of recent dissolution. Where the child was alive, I should impute the smallness of its size either to original defect of constitutional vigor, or to retarded growth and development; and if dead, to disease, or to one of those numerous accidents to which it is perpetually exposed. It has long been known, that the fœtus in utero is subject to many of the most violent diseases. They have come into the world covered with smallpox, deformed by syphilis, and even with calculi in the urinary bladder. But it may be asked why, if the smaller fœtus were thus early deprived of vitality it did not exhibit the signs of putridity? To this interrogatory the answer is prompt. When the membranes of the ovum are entire, so as to exclude air, the process of putrefaction in the fœtus is resisted during gestation.*

My explanation of each description of the cases to which I have alluded, may, after what has been said, be comprised in a few words. Twins were conceived. At an early stage of pregnancy one of the fœtuses perished, or its evolution was interrupted. As twins are inclosed in a separate involucrum, and are nourished by different placentæ or distinct portions of the same organ, as often happens, the one fœtus may not at all be affected by circumstances which might prove mischievous or fatal to the other.

But there is still another order of cases which is occasionally summoned to sustain this hypothesis. It is asserted, that women have brought forth two full grown children at the same birth, the one *white* and the other *black*, the product of a connexion in immediate succession, with a black and a white man. I have met in my researches but with three recorded instances of this sort, and they come in a very "questionable shape." No one of the historians of these marvellous stories pretends to have witnessed such a case. They are given merely on the authority of hearsay, or popular report. As related, the cases indeed carry with them internal evidence of condemnation. There could not, under the alleged circumstances of the connexion, be a *white* and a *black* child, but one must have been a *mulatto*, according to the invariable result of a fruitful intercourse between the negro and white!

* Smellie's Midwifery. Cases, in corroboration of this fact, are indeed familiar to every obstetrical practitioner.

But if substantiated, what would these cases avail in the present controversy? They are not instances of superfœtation. To bring them within the proper meaning of the term, it must be shown, that the children were of " very different ages and sizes." But as the reverse is stated, they can only, even if true, be classed with other examples of *contemporaneous conception.*

It appears to me, on the whole, that this hypothesis has not the slightest claims to our attention. It comports neither with reason, fact, nor analogy; and is repugnant to the established laws of generation, and the uniform course of nature.

Philadelphia, March 25th, 1811.

ORIGINAL REVIEW.

" *An Account of the remarkable Effects of the Eau Medicinale d'Husson, in the Gout. By Edwin Godden Jones, M. D. Member of the Royal College of Physicians of London, and Physician extraordinary to his Royal Highness the Duke of York.*" *Second Edition. London.*—1810. pp. 101. 12mo.

" The Eau Medicinale was discovered about forty years " ago, by M. Husson, a military officer in the service of the " king of France. He discovered a plant, whose virtues were " before unknown, from which he prepared his medicine in " its present form."

It has been analyzed by eminent chemists in France and England, and found to be a vinous tincture of some unknown vegetable, without any portion of a mineral substance. It is sold in Paris, where only it is prepared, and in London in small bottles which will hold little more than two drachms by measure—it is of the color and appearance of ale, but becomes brown and turbid on agitation. Its taste is nauseous and bitter, but not intensely so, nor does it leave a durable impression in the mouth, as many bitters do. Its smell partakes of that of Spanish wine, the menstruum employed, and that of the plant, its ingredient, which is the basis of the composition. It is strong and very peculiar and characteristic.

The whole bottle, mixed with more than an equal quantity of water is a full dose—to be taken on an empty stomach, at

any time of day, but night is the most convenient. Its operation may be advantageously promoted by a free use of any aromatic tea.

It happens for the most part, that in four or five hours after taking the remedy, the patient begins to experience a diminution of pain, however severe the paroxysm may be. He generally falls into a quiet sleep, and awakes in the morning, nearly or quite free from suffering; and often begins already to enjoy some returning use of the affected limb. About this time he commonly feels a considerable nausea, sometimes accompanied by vomiting, and this is followed by some bilious stools. In the mean time the paroxysm goes on diminishing; and on the third, or even on the second day, little more of it remains than a swelling or stiffness of the parts, which soon go off leaving the patient in his usual state of health.

With the diminution of pain, there is an abatement of fever and irritation, and of the action of the heart and arteries. The pulse is often reduced twenty strokes in a minute, and often more—a moderate diaphoresis takes place frequently.—It also often acts as a powerful diuretic, and for many days.

This remedy is most useful when early applied. It may, however, be given at any period. It sometimes merely removes the present paroxysm—and to prevent returns of the disease it may be occasionally used in smaller doses.

The Eau Medicinale is so far a cure for the gout that by it we may almost certainly remove the paroxysms, as often and as soon as they occur; many persons by this remedy have been able to cut off the attacks of gout in their very beginning, and it is very probable, that, by employing it in doses adapted to circumstances, and by a proper regimen, even the desirable object of preventing the return of the fits may be in a great measure accomplished.

It has been dreaded that the Eau Medicinale might eventually produce the same fatal consequences, that have been attributed to the famous Portland Powder, or to other applications, which are supposed to drive it from the extremities to some vital part, but it acts not by local effects, but on the system generally; and no instance has occurred of dangerous consequences from its use.

Let us hope that the composition of this remedy will not always be concealed; and that if it should continue to deserve the high reputation it has lately acquired, the time is not far distant, when the French government will, by rewarding the proprietor, obtain possession of the secret, and publish it for the general benefit of mankind.

A number of cases are given to show the efficacy of the remedy. It was first used by John Crawfurd, Esq. of Auchinames, to whom the introduction of it into England in 1808, is chiefly owing. This gentleman first heard of it at Montpelier in 1802, from Dr. Chretien, a physician of that place. A number of publications on the remedy, have appeared in France, at different intervals. Amongst the names of persons cured in London by its use, those of Sir Joseph Banks, and Major Rennell, with a number of the nobility appear.

We do not undertake to give an opinion on the value of this publication—conceiving that the most useful employment of a reviewer is to let the author tell his own tale—and leave the reader to judge of its merits. The subject is surely an important one; and when we consider how much time and talent are requisite to establish the virtues of a new medicine, it is to be hoped that the present one will not be hastily overlooked, because its composition is hitherto unknown—and more especially as we have very lately learned, that it continues to be well thought of by the most respectable London practitioners.

Biographical Notice of Dr. Osborne.

In the month of August 1808, died at his country house near Dover, William Osborne, M. D. aged 76. Dr. Osborne was born in the county of Rutland, where, after obtaining a good classical education, he received the early part of his medical acquirements under the guidance of Dr. John Fordyce, of Uppingham. After passing some years with that able instructer, he came to London, and attended the lectures of the late Dr. William Hunter, and the practice of St. George's Hospital. His industry in the pursuit of knowledge was much

assisted by a memory uncommonly retentive, and a happy art of arranging all that he read and saw, so as to be able always to produce it with great readiness when occasion required. This faculty, aided by a well regulated judgment, probably contributed, in a great degree, to that celebrity which he afterwards attained in his profession. Having finished his studies in London, he went to Paris, where he attended the practice of the Hotel Dieu, and the teachers at that time in highest estimation, particularly the celebrated accoucheur, Levret. This gave a bias to his mind, which, fortunately for the interests of mankind, led him into that department of medicine, in which he maintained for many years, as long as his health permitted, the highest character. On his return from France, he took a professional situation in the guards, and went with the regiment to Germany, in the war at the end of the last and beginning of the present reign. It is remarkable that many of the young men at that time engaged in the army, in the service of their country, rose afterwards to the highest honours, and most distinguished situations in the metropolis. At the conclusion of the war Mr. Osborne settled in London, as a surgeon; but his studies at Paris gave a bias to his mind, and led him to devote his attention to the improvement of midwifery, and the investigation of the diseases incident to women and children. A similarity of pursuits and opinions produced a connexion between him and Dr. Denman, which led to their association in a plan of opening a school in London, for teaching the principles of Midwifery on a liberal and extended scale, and rescuing the practice from ignorance and temerity. The celebrity which their lectures acquired, is a strong proof of their fitness for so laudable an undertaking; and the number of pupils from every quarter of the world, showed how well their well-earned fame was appreciated. To the combined influence of public teaching, and to the scientific publications of Dr. William Hunter, Dr. Osborne and Dr. Denman, we are indebted for many improvements in the practice of midwifery, and a better knowledge as well as a more simple and effectual treatment of the diseases of women and children. Dr. Osborne soon rose to great eminence in the practice of his profession, for which he was not more qualified by the powers of his mind, than by a

peculiar urbanity of manners and deportment, and a disposition naturally tender and humane. The extent of his practice and the time he devoted to study, did not leave him much leisure for writing. He has, however, left behind him a work of great practical utility, on natural and laborious parturition, which will rank him among our best medical writers, whether the elegance and perspicuity of the style, or the manner of treating the subject be considered. The fatigue necessarily attendant on a laborious profession slowly impaired his constitution, and brought on complaints of the stomach, and palpitation of the heart, which induced him about the year 1800 to retire to his estate at Old Park, near Dover, where he acted as a magistrate for the county of Kent, and was always ready to afford medical assistance to the poor in his own neighbourhood. Here he lived in learned leisure, in the bosom of his family. About two months before his death, the symptoms of great debility in the stomach rapidly increased: the disease about his heart was very much aggravated, and he was well aware it would terminate fatally. He looked forward to his death with great composure and resignation, and with the humble confidence of a christian. He retained the powers of his mind and the vivacity of his disposition to the last moments of his life, and died almost without a struggle. The whole tenor of his life was useful to society; and his death was such an one as good men might envy.—[Edinburgh Med. and Surg. Jour. vol. v. p. 28.

MEDICAL INTELLIGENCE.

National Vaccine Establishment.

From the Annual Medical Register, for 1808.

It was understood, after the very decided tone, which the College assumed in their reports to the House of Commons, relative to the efficacy of the cow pock, that the Royal Jennerian Society, which was instituted and had flourished under the patronage of their Majesties, and of the whole Royal Family, would immediately have received the support of government. But government, it should seem, can only act through corporate organs; the work of vaccination has been

put into the hands of the President and Censors, for the time being, of the College of Physicians, and of the Master, and two other officers of the College of Surgeons, who constitute a Vaccine Board. The Jennerian Society necessarily falls to the ground; for the contributions of individuals are naturally withdrawn, when it is known that the public purse is open for the prosecution of a similar purpose. The sum of 3000 pounds, for the year, was voted by Parliament. An expensive *ready-furnished* house has been hired in Leicester Square, for the residence of the Register (who is also Register of the College of Physicians), and for the meetings of the Board; but no vaccination is there permitted: apartments in a house in Lisle Street having been likewise hired for the purpose of a central inoculating station, and for distributing the vaccine virus gratuitously. Dr. Jenner was not made one of the Board; but had the purely nominal appointment of *Director* assigned to him, which, however, he has declined.—Mr. Moore was appointed *sub-director*, and six inoculators were nominated to perform vaccination gratuitously in different districts, in London; to whom, we believe, a seventh has been added, for the Borough. Among these are Mr. Carpue, Mr. Charles Aikin, Mr. Lane, of Guilford Street, Mr. Vincent, Assistant Surgeon to St. Bartholomew's hospital, Mr. Sawrey, of Chancery Lane, and Mr. Halls, of Westminster. Mr. Murray, the active Secretary of the late Jennerian Society, has been appointed Secretary to the Board.

Although this establishment has, in our opinion, been constituted in a very objectionable manner, we are happy to hear, that some active measures have already been adopted for making its existence and objects known; we trust that this new energy will continue unabated; and perhaps the annual change in the Board, with the changing Censors, &c. of the Colleges, may be the best pledge for its continuance. Letters addressed to the Register, Dr. Hervey, 21, Leicester Square, will obtain for medical practitioners, in the country, a supply of vaccine virus, which will be sent to them, free of postage.

Case of Calculus removed by Dilatation from the Female Bladder.

From the London Medical Review.

A woman named Keen, who had not been able to retain her urine since her last delivery, which was a year ago, was lately admitted into Guy's Hospital for the stone.

On the 21st of last June, a piece of sponge was, by order of Mr. Astley Cooper, passed into the meatus urinarius, and on the 22d the sponge was withdrawn and a pair of middle sized stone forceps, were easily passed into the bladder, and a stone of one inch and a half long by one inch wide was extracted.

On the 27th she was discharged from the hospital, free from every symptom of stone, but the incontinence of the urine continues as before the operation.

Mr. Cooper acknowledged to the pupils that he was induced to make this trial by Mr. Thomas's interesting paper on the dilatability of the meatus urinarius, and rectum, published in the Medico-Chirurgical Transactions.

Prize Medals,

OFFERED BY THE HUMANE SOCIETY OF PHILADELPHIA.

The success which has hitherto attended the efforts made to restore suspended animation has been highly encouraging, but it is well known that these endeavours are often unavailing. It remains then not only to strive to discover some more efficient means for the attainment of this desirable purpose, but also to ascertain the time and circumstances in which such attempts may be made. The managers of the Society, although disappointed in not receiving a successful communication, yet do not feel discouraged. They are aware of the difficulty of the subject, but fully convinced of its importance. Under these impressions, they are induced to offer,

For the best Dissertation on the means of restoring to life persons apparently dead by Drowning, and more effectual than

any yet in use, a GOLD MEDAL, value TWO HUNDRED DOLLARS.

For the second best, a PIECE OF PLATE, value ONE HUNDRED DOLLARS.

The Dissertations are to be sent to the Secretary of the Society (post paid) by the first day of January, 1813.

They may be written in the English, French or Latin language, to be accompanied with a sealed paper, containing the author's name and place of residence, which is not to be opened unless the prize is decreed.

They shall be submitted to the judgment and decision of the Medical Professors of the University of Pennsylvania.

By order of the Managers of the Humane Society.

JOSEPH CRUKSHANK, Pres.

ISAAC SNOWDEN, Secretary.

Philadelphia, October 10, 1810.

Philadelphia Dispensary.

The number of patients who have been attended by the physicians of the Philadelphia Dispensary, from December 1st 1809, to December 1st 1810, is, three thousand two hundred and seventy five.

Remaining under care from last year - - -				82
Admitted since last year - - - - -				3193
				3275
Of whom the number cured is - - -		2916		
Relieved - - -		98		
Dead - - -		99		
Irregular - - -		38		
Removed - -		26		
Remaining under care -		98		3275
The receipts of moneys of the Institution during the year have been - - - -			$ 3208	58
The expenditures have been -	$ 2588	28		
Balance due last year - -	269	95		
Balance in treasurer's hands this year	350	35	$ 3208	58

December 24th 1810.

Vaccine Society.

A society for promoting Vaccination was instituted in this city two years since. Collectors are employed, who call on the poor throughout the city and suburbs and report such as require vaccination to the physicians of the society, who vaccinate them at their respective habitations. Between two and three thousand persons have already been vaccinated. A regular account of the cases is preserved.

Statement of Deaths, with the diseases and ages, in the City and Liberties of Philadelphia, from the 1st of January 1810, to the 1st of January 1811.

DISEASES.	Under 1 year	From 1 to 2	From 2 to 5	From 5 to 10	From 10 to 20	From 20 to 30	From 30 to 40	From 40 to 50	From 50 to 60	From 60 to 70	From 70 to 80	From 80 to 90	From 90 to 100	From 100 to 110	Total
Abortion,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Asthma,	1	0	1	0	0	1	1	1	2	2	1	1	0	0	11
Abscess,	0	0	0	0	1	2	2	1	2	0	0	0	0	0	7
Aneurism,	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Apoplexy,	2	2	1	0	2	2	5	7	5	3	1	0	1	0	31
Atrophy,	3	2	1	0	1	2	1	1	2	1	1	0	0	0	15
Burns	2	2	4	4	0	0	0	1	0	1	0	0	0	0	13
Cancer,	1	0	0	0	1	0	2	1	1	1	1	0	0	0	8
Caries of the Spine,	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Casualties,	0	2	0	1	1	5	3	3	1	0	0	0	0	0	16
Catarrh,	2	0	1	0	0	2	0	0	0	0	2	1	0	0	8
Child Bed,	0	0	0	0	1	0	2	0	0	0	0	0	0	0	1
Cholera Morbus,	129	49	12	11	0	2	3	0	0	1	1	0	1	0	206
Colic,	2	0	0	0	1	3	2	0	0	0	1	1	0	0	10
Consumption of the Lungs,	8	8	6	1	20	80	82	53	16	24	6	2	0	0	306
Contusion,	1	1	0	0	0	1	0	0	0	0	0	0	0	0	3
Convulsions,	141	13	9	4	0	3	7	4	1	0	1	0	0	0	183
Chicken Pox,	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Decay,	7	6	3	2	5	5	23	6	16	7	10	5	0	0	95
Diabetes,	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Diarrhœa,	4	4	3	1	0	2	0	2	0	1	0	1	0	0	18
Dislocations,	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Dropsy,	0	1	2	0	2	3	9	8	4	6	4	3	0	0	42
Dropsy of the Breast,	3	4	2	1	4	8	6	5	8	2	0	0	0	0	43
Dropsy in the Brain,	11	9	11	8	2	1	1	0	1	0	0	0	0	0	44
Drowned,	1	0	0	2	7	4	6	2	2	2	0	0	0	0	26
Dysentery,	5	6	3	2	1	2	1	2	2	0	3	0	0	0	27
Drunkenness,	0	0	0	0	1	3	4	3	0	1	0	0	0	0	12
Diseases in hip joint,	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Debility,	15	3	0	0	1	1	6	3	4	6	4	1	0	0	44
Epilepsy,	0	0	0	0	1	1	2	0	1	0	0	0	0	0	5
Eruptions,	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Erysipelas,	0	0	0	0	0	0	1	1	1	0	0	1	0	0	3
Fever,	6	2	1	0	1	5	13	0	1	1	0	1	0	0	31
Fever Intermittent,	0	1	0	0	0	0	1	0	1	0	0	0	0	0	3
Fever Remittent,	1	1	3	3	0	3	1	3	2	0	0	0	0	0	17
Fever Bilious,	0	1	0	2	2	6	1	1	2	0	0	0	0	0	15
Fever Nervous,	1	0	0	0	2	2	1	0	0	1	0	0	0	0	7
Fever Malignant,	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
Fever Typhus,	0	1	3	1	3	15	5	4	5	0	1	0	1	0	39
Fever Puerperal,	0	0	0	0	0	8	4	0	0	0	0	0	0	0	12
Fever Hectic,	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Fever Scarlet,	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Fever Inflammatory,	1	0	2	0	0	0	0	2	0	0	0	0	0	0	5
Mortification and Gangrene,	3	0	2	0	0	3	2	1	5	1	1	0	0	0	18
Gout,	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1
Gravel,	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
Hooping Cough,	15	11	6	0	0	0	0	0	0	0	0	0	0	0	32
Hives,	32	7	6	1	0	0	0	1	0	0	1	1	0	0	49
Hernia,	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Hemorrhage,	0	0	0	0	0	0	2	1	3	0	1	0	0	0	7
Inflammation of the Brain,	2	1	2	1	1	2	5	1	0	1	0	0	0	0	16
Inflammation of the Lungs,	0	1	0	0	1	0	2	2	4	1	0	1	0	0	12
Inflammation of the Stomach,	1	1	3	0	2	2	6	3	2	3	2	0	0	0	25
Inflammation of the Bowels,	7	3	2	1	1	5	7	6	2	3	1	0	0	0	38
Inflammation of the Liver,	1	0	2	2	0	2	8	1	4	0	0	0	0	0	20
Inflammation of the Bladder,	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Insanity,	0	1	0	0	0	7	7	5	5	2	2	0	0	0	29
Jaundice,	0	0	0	0	0	1	2	1	0	0	0	0	0	0	4
Locked Jaw,	1	0	0	0	0	2	0	0	0	0	0	0	0	0	3
Lethargy,	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Measles,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Old Age,	0	0	0	0	0	0	0	0	0	1	9	25	7	2	44
Palsey,	0	0	0	0	1	0	0	0	4	1	4	0	0	0	10
Pleurisy,	9	5	4	3	2	10	9	16	4	7	3	1	0	0	73
Rheumatism,	0	0	0	0	1	1	1	1	1	1	0	0	0	0	6
Rickets,	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2
Scrofula,	0	3	2	0	2	1	2	0	0	0	0	0	0	0	10
Sore Throat,	5	4	1	2	0	3	0	0	0	1	1	0	0	0	17
SMALLPOX—NATURAL,	10	5	3	2	0	11	2	0	0	0	0	0	0	0	33
SmallPox, Inoculated,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Still Born,	139	0	0	0	0	0	0	0	0	0	0	0	0	0	139
Suicide,	0	0	0	0	0	2	0	1	2	1	0	0	0	0	6
Sudden,	3	0	0	0	0	1	8	1	23	5	3	0	0	0	44
Syphilis,	0	1	0	0	0	6	1	2	1	0	0	0	0	0	11
Tabes Nephritica,	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Teething,	4	3	0	0	0	0	0	0	0	0	0	0	0	0	7
Thrush,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tumors,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Ulcers,	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Worms,	3	2	8	2	0	0	0	0	0	0	0	0	0	0	15
Unknown,	4	1	3	1	0	6	6	4	0	5	1	0	0	0	31
	591	169	115	59	74	240	264	168	142	96	67	45	9	2	2036

Deaths in each Month, of the above Period.

	Adults.	Children.	Totals.
January, - - -	82	67	149
February, - - -	82	70	152
March, - - -	87	40	127
April, - - -	96	56	152
May, - - -	99	65	164
June, - - - -	68	79	147
July, - - - -	63	129	192
August, - - -	91	178	269
September, - - -	91	82	173
October, - - -	104	89	193
November, - - -	86	66	152
December, - - -	87	79	166
Total - -	1036	1000	2036

By order of the Board of Health,

JOHN ALLISON, Clerk.

Health Office, February 9, 1811.

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